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GREEN RIVER BASIN
WYOMING
Type IV Study

#6 ENVIRONMENTAL BASE WORKING PAPER 4/D

APRIL 1978



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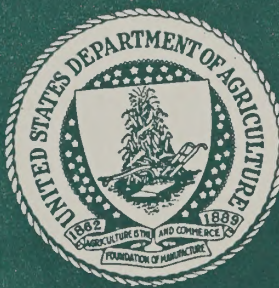
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A Brief History of Resource Use, Green River
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PREFACE

The Environmental Base Working Paper was compiled and written by the members of the Field Party as an information source for the Green River Basin Cooperative Study Final Report. A second purpose for the Environmental Base paper is to serve as a reference and information source for local governments and other federal and state agencies. This should be particularly helpful for county governments and conservation districts as all information is presented by counties. Special detailed data for each county is presented in chart form under Appendix items 1 through 4 and 9. The Soil Conservation Service has mailed copies of the final draft working paper to interested groups, agencies and persons.

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CHAPTER I

INTRODUCTION

Forest and rangelands of Wyoming's Green River Basin are largely undeveloped and quite extensively managed. The basin's natural and cultural resources are well dispersed throughout its 13 million acres. Before 1970, desert and mountain landscapes experienced low density and seasonal use by man. Since 1970, activity associated with expanded mineral and energy development has intensified and spread land uses of all kinds. Additionally, increased recreation activities have impacted desert and mountain landscapes as well.

Prior to mineral and energy expansion, seasonal low density uses of mountain and desert land were primarily localized mineral and energy development, grazing, logging, hunting and fishing. Examples of new and increased land uses are:

1. Basinwide mineral and energy exploration and expanded development.
2. Urban and industrial expansion.
3. Transportation system extension and proliferation.
4. Off-road use of recreation vehicles.
5. Subdivision for recreation and retirement homes.
6. Increased wilderness use.
7. Increased traffic associated with the use in Yellowstone Park.

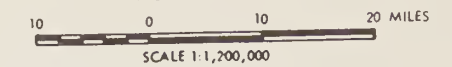
Impact on the basin's desert and mountain environment has magnified greatly in seven years' time. There is little doubt this trend will continue.

This working paper focuses on nine components of the basin's forest and rangeland environment. They are: (1) visual resources; (2) vegetation; (3) stream and river systems; (4) lakes, reservoirs and other flat water; (5) wilderness and roadless areas; (6) fishery resources (7) wildlife resources; (8) paleontological resources; and (9) cultural resources. The purpose of this report is to present an extensive baseline inventory of component natural and related cultural resources together with component resource potentials, problems and needs.

Component resources were selected from classes of environmental effects in the U.S. Water Resources Council's Principles and Standards as published in the Federal Register, Volume 38, No. 174, September 10, 1973.

PLANNING AREAS GREEN RIVER BASIN WYOMING

NOVEMBER 1976

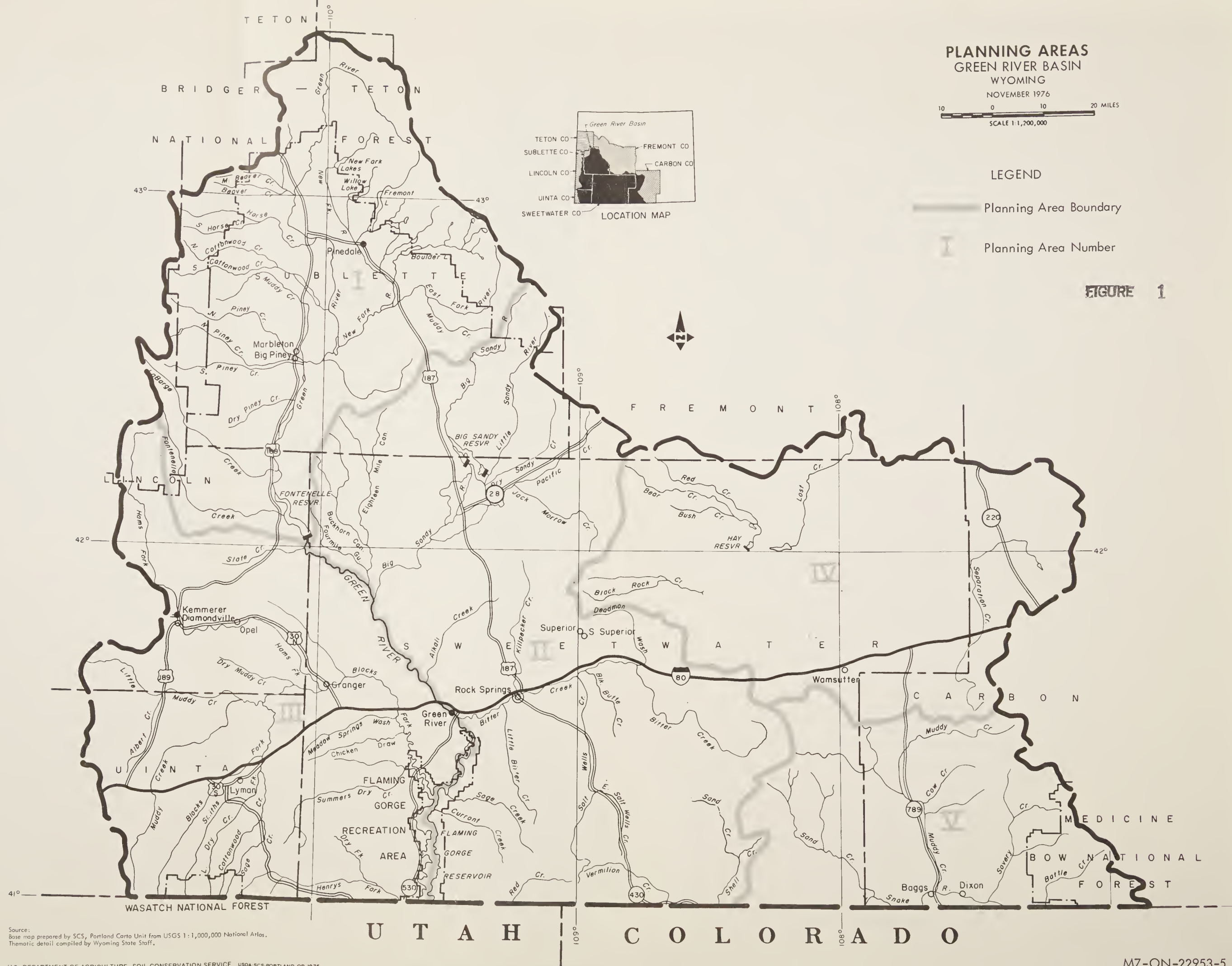


LEGEND

Planning Area Boundary

Planning Area Number

FIGURE 1



Source:
Base map prepared by SCS, Portland Carto Unit from USGS 1:1,000,000 National Atlas.
Thematic detail compiled by Wyoming State Staff.

CHAPTER II

NATURAL AND RELATED CULTURAL ENVIRONMENT

Basin Environment

Physical Description

The Green River Basin in southwestern Wyoming includes an area of 21,049 square miles or 13,471,500 acres. This area includes all tributaries to the main stem of the Green River and the topographically closed Great Divide Basin. The Great Divide Basin, like the majority of the Green River Basin, is a high plateau basin and is 3,920 square miles in size. In this working paper, the two basins will be referred to collectively as "basin" or "study area". A map of the Green River Basin occurs on the following page.

Basin relief appears as a high desert plateau with peripheral alpine mountain ranges on the west, north and east. Elevations in the basin area range from 6,040 feet above sea level at Flaming Gorge Reservoir to 13,785 at Gannett Peak in the Wind River Range. Rough mountain topography along the basin rim falls in elevation from wooded upland flanked with grass-covered mountain meadows to an interior basin floor typified by treeless arid plains, badlands, mesas, bluffs, and deep canyons.

The Green River Basin is within the erosive influence of the Green River and its tributaries. Its terrain is relatively flat, lying mostly between 6,040 and 7,500 feet above sea level, although stark, pinnacle-like buttes rising more than 500 feet above the plain show the extensive erosion that has taken place in the recent past.

Rock Springs Uplift, a highly dissected, oval-shaped asymmetrical dome 60 miles long and 35 miles wide, is a conspicuous physiographic and structural feature that separates the downwarped Green River Basin on the west from the Great Divide and Washakie Basins on the east. The uplift lies generally between 6,500 and 7,500 feet in elevation. Steamboat Mountain forms the north end of the uplift and is the highest point of the uplift with an elevation of 8,683 feet. This mountain is a mesa of poorly consolidated sedimentary rock capped by hard, erosion-

resistant lava flows. The entire Rock Springs Uplift is extensively dissected due to headward erosion by small intermittent creeks with steep gradients incised into the loose, unconsolidated strata. Many of the canyons exhibit preferential orientation corresponding to one or more of the regional joint and fracture systems in the bedrock.

The Great Divide Basin is unique and derives its name from the bifurcation of the Continental Divide around a 3,920 square mile topographic depression. Lying mainly between 6,500 feet and 7,000 feet above sea level, its surface is flat or hummocky and is dissected by numerous narrow draws and shallow dry washes that are a measure of the bedrock's relative resistance to erosion by wind and water. Several small, intermittent streams have incised steep walled canyons as much as 500 feet into the east flank of the Rock Springs Uplift. All surface drainage in the Great Divide Basin is intra-basinal and alkaline, particularly at the lower elevations.

Sand dunes in varying stages of development and transport are present along an east-west trend for more than 50 miles. Some of these dunes rise as high as 100 feet above the floor of the surrounding area. Within sight of sand dunes and arid peripheral slopes is the Wind River Range. This range contrasts greatly with the Green River and Great Divide Basin floors.

Glaciers are still active within the Wind River Range. Glacier meltwater collects in numerous small lakes at higher elevations and these lakes head the Green River and its initial tributaries. In contrast, large areas of desert plateau contribute practically no water to the Green River.

Human Occupancy and Use of Basin Environment

Settlement and activities of inhabitants and visitors have been greatly influenced by the basin's physical environment. The high plains desert, rugged peripheral mountains and the few verdant, fertile valleys have limited and clustered settlement. High elevation, short growing season and cool climate discouraged settlement and agriculture in all but a dozen or so locations.

Earliest habitation dates back 13,000 years with the most widespread occupancy within the last 2,000 years. Human activities appear to have been mostly transient hunting, quarrying and camping. Little evidence of early agriculture has been found.

Recent and present occupancy is based mostly upon agriculture, transportation, minerals and energy. Ranchers produce mostly hay to winter feed range livestock. The most productive haylands are located in Bridger Valley, Hams Fork, Upper Green River, Eden Project, and the Little Snake River Valley.

Land reclamation efforts in the Eden-Farson area and the Lyman area have added more irrigated land. Opportunities to add more farm land are limited by climate and physical land characteristics.

Basin lands are mineral rich. The physical environment has not curtailed mining efforts. Some disregard for scenic features and watershed values has occurred. At present and in the future, mining and energy development is and will be better coordinated with the basin's physical environment.

The basin's twenty or so towns and cities are principally located in agricultural, mineral and transportation intensive areas. Except for settlement along Interstate 80 and the Union Pacific railroad route, people have essentially avoided permanent settlement in the desert and mountainous regions. However, current mineral and energy development activities are encouraging temporary occupancy of dry, desolate desert locations. Some persons in the basin are in opposition to increased desert occupancy. Landowners near the Wyoming and Wind River Range are encouraging recreational residency by subdividing lands for summer homes and lodges. Recreation subdivision is occurring mainly on private lands in the mountainous areas of the Upper Green River Basin.

Visual Resources

The Green River Basin has a relatively untouched natural landscape. Most landscapes in the basin have a minimum of visible man-made disturbance. Except for the Green River-Rock Springs area, communities are small and quite well dispersed throughout the basin. Where rural or urban

developments have been haphazard and concentrated, unattractiveness and incongruity prevail. This is especially true in some locations along Interstate 80 and in some sections of Green River City and Rock Springs.

Agricultural settings in the basin's few large, verdant valleys are pleasing to the eye. The pastoral landscape of Bridger Valley, Snake River Valley, and the Pinedale area are good examples of agriculture in harmony with the landscape.

Visual quality of natural land features were classified based upon vegetative pattern and land form. The more varied the vegetation types and the topographic relief, the more interesting the landscape. Landscape architects used this simple criterion to judge visual attractiveness in four broad visual quality classes (Figure 2). The visual classes and estimated percentages comprising each class follows:

1. Very low visual quality - barren flatland - 53%
2. Low visual quality - sagebrush and low brush on low hills - 22%
3. Average visual quality - occasional trees on complex topography - 12%
4. High visual quality - forested mountains - 13%

Chart II-1 shows the visual quality classifications for the Green River Basin. Similar charts for each county in the basin are located in Appendix 1.

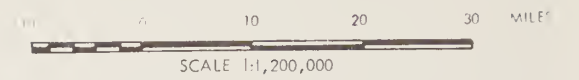
Outstanding Basin Landscapes

Wind River Mountain Range





The basin includes the western slopes of the Wind River Range, and thus, one of the most scenic, rugged, granite landscapes in the continental United States. Regional, national and local populations highly revere the glaciated terrain, the vegetal variety and the numerous alpine lakes and reservoirs. More than 200,000 recreation visits per year have been made to the Wind River Range's western slopes since 1975. Also, visitors thrill to the distant view of the peaked and blocked granite mountains rising above steep forested slopes.

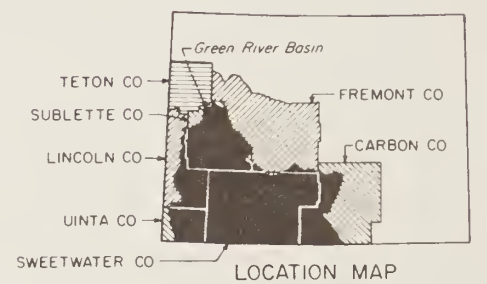
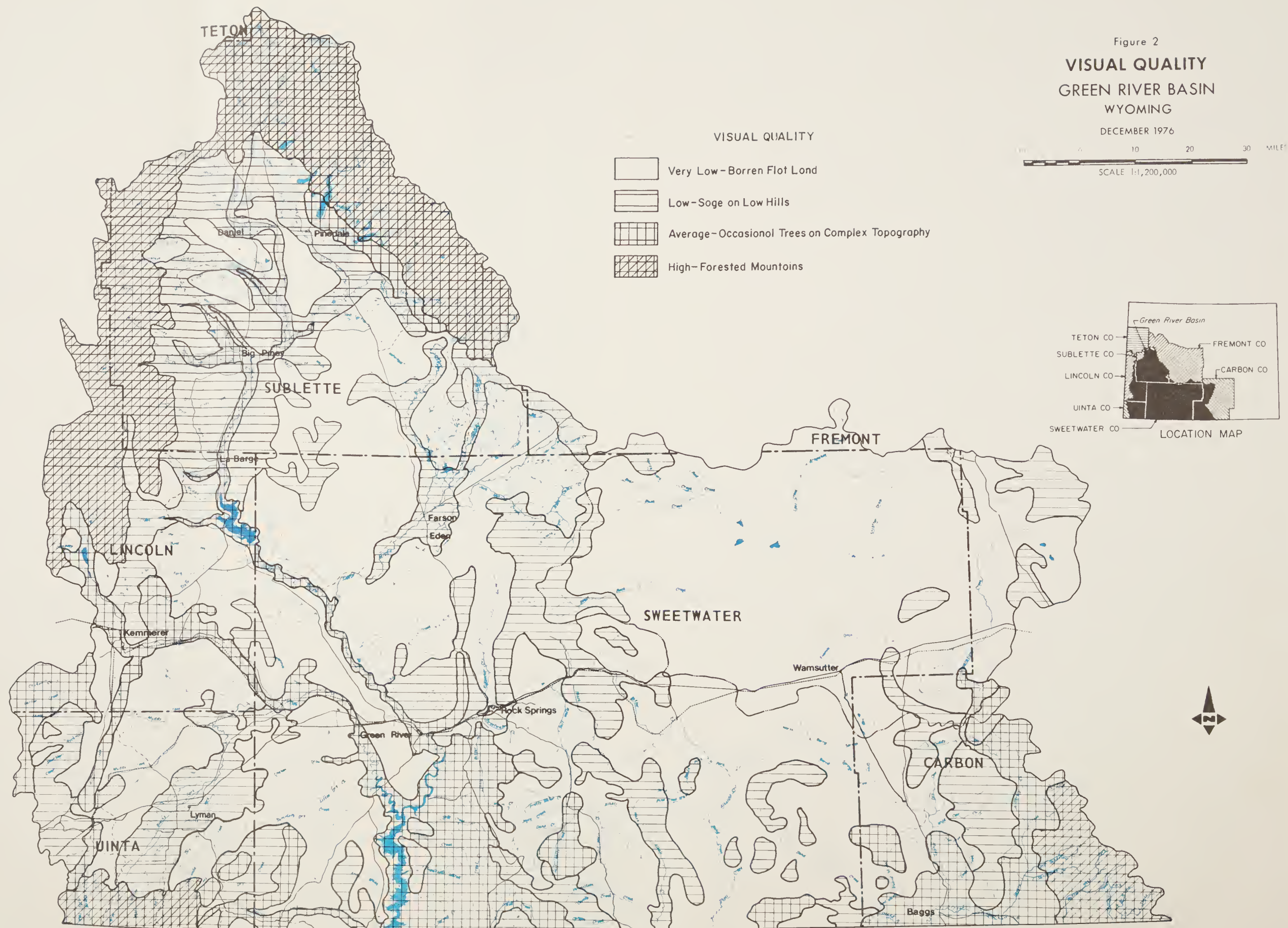
Figure 2
VISUAL QUALITY
GREEN RIVER BASIN
WYOMING

DECEMBER 1976



VISUAL QUALITY

-  Very Low - Barren Flat Land
-  Low - Sage on Low Hills
-  Average - Occasional Trees on Complex Topography
-  High - Forested Mountains



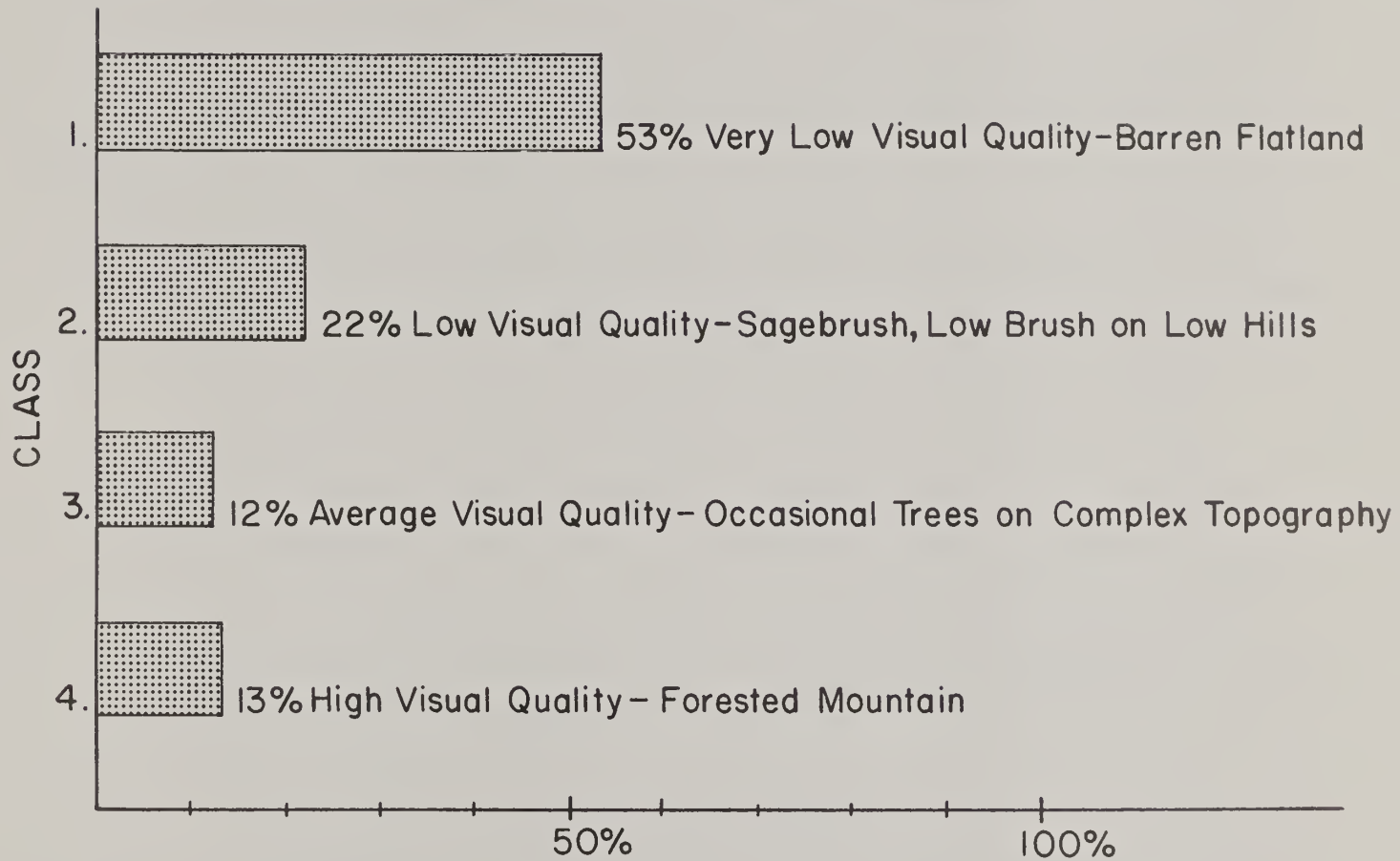
Source:
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 Team Cooperative River Basin Survey. Map, 1:500,000.
 Thematic detail from Bureau of Reclamation Study using Jacobs-way Visual
 Evaluation Method, 1976.

U.S. DEPARTMENT OF AGRICULTURE SOIL CONSERVATION SERVICE USDA-SCS-PORTLAND, OR 97208

Cooperative River Basin Studies
 State Engineer, Wyoming Water Planning Program

Chart II-1

Visual Quality by percent, Green River Basin, Wyoming



Wyoming Mountain Range

The Wyoming Range borders the upper western and northwestern boundary of the basin. These mountains resulted from large thrust faults followed by minor uplifting, falling and folding. Geologic processes forming these mountains contributed to the striking rugged appearance. Mid and upper slopes provide a very scenic rocky and forested appearance from the basin floor. Toe slopes are less visible from below. Toe slopes appear well forested and have absorbed a great deal of land use and timber harvest very well.

Flaming Gorge National Recreation Area (NRA)

Wyoming's share of Flaming Gorge NRA is essentially the Green River and Blacks Fork River that include the upper 20 miles of Flaming Gorge Reservoir. Recreationists and highway travelers are impressed by water-oriented recreation in a desert setting and by backdrops of multi-colored rock formations and rolling sagebrush, grass hills. Visitors to the shoreline and on the water experience feelings of openness and vastness in the water and desert setting. Firehole recreation complex is the northern most developed area on the upper east arm of Flaming Gorge Reservoir. The complex features spectacular rock spires as background to low sagegrass rolling terrain.

Adobe Town and Red Creek Areas

Adobe Town is an erosive, rugged "badlands" area located south of Rock Springs on the Colorado border. The highly erosive and less accessible lands are a component of the Uinta and Bridger geologic formations. These formations contain a wealth of fossil history.

Artifacts from early human cultures have been discovered here. Wild horses, deer, and antelope have had the run of this country in recent years as water and access are limited. Both Adobe Town and Red Creek contain about 121,000 acres of BLM administered Natural Resource Land, and hold excellent opportunity for isolation and desert experience (15).

Red Creek is a visually interesting steep canyoned area. Natural

erosion has formed these canyons and badlands terrain from the erosive Wasatch and Fort Union geologic formations. Pinyon-juniper type with sagebrush parks provide essential range for deer and elk. Open space and untouched natural conditions make this area along with Adobe Town an outstanding general landscape feature.

Boars Tusk

A well known, geologic formation 27 miles north of Rock Springs. Boars Tusk is the remnant of a volcanic neck which rises 400 feet above the surrounding plain. It is plainly visible for many miles and stands as a solitary landmark. In the desert setting, a volcanic neck is one of a kind and contrasts interestingly with the surrounding landscape.

Sand Dunes

The basin's sand dunes are aeolian deposits of pure sand. They extend from a location southeast of Eden, Wyoming, eastward, well within the Great Divide Basin. The dunes occupy an estimated 82,000 acres and lie in a narrow band of land 60 miles long. This sand dune area is considered to be one of the largest in the United States.

Blue Forest

The Blue Forest is an extensive area of scattered petrified wood and is located south of Fontenelle Reservoir and east of the Green River. The desert floor in this location includes remnants of an ancient forest dating back to the Eocene epoch.

Vegetation and Landscapes

Vegetation and landscape appearance and pattern are discussed in this section. Vegetative resources of the Green River Basin are classified under eleven general types or aspects. Three other non-vegetal aspects were also classified. Forest Service and Soil Conservation Service range conservationists interpreted vegetal and nonvegetal types on false color infrared satellite imagery. They sampled and field-checked office mappings and adjusted delineation where necessary. Table II-1 gives the acreage of vegetal and non-vegetal aspect by county and type.



Photo 1 - Green River - Natural setting (Kendall Springs inlet to the Green River)



Photo 2 - "Y" stream - Appearance dominated by man's activities (auto body revetment and brush rock dam)



Photo 3 - "X" stream - Natural setting



*Photo 4 - "X" stream - Appearing dominated by man's activities
(streambank trampled by heavy livestock grazing)*

Table II-1 Acres of generalized aspect by map number, county, and planning areas, Green River Basin, Wyoming.

Map Number	2	3	4	5	6	7	8	9	10	11	12	13	14
Planning Areas	Lakes	Halophytic:	Shrub	Mountain:	Conifer	Rock	Dunes	Juniper	Aspen-	Meadows	Alpine	Low Shrub	Phreatophytic
	Playas	Shrub	Grass	Brush		Outcrop			Birch-	Hayland		Grass	Shrub
									Oak	Pasture			Bottoms
Planning Area I:													
Teton	200	-	-	400	6,620	-	-	-	4,580	-	169,890	19,920	57,600
Sublette	31,130	211,220	761,130	12,200	478,300	2,000	-	-	272,120	268,850	13,380	-	6,240
Lincoln	10,470	41,440	180,410	-	37,600	-	-	-	67,110	21,850	-	-	-
Sweetwater	120	810	2,980	-	-	-	-	-	-	-	-	-	90
Subtotal	41,920	253,470	944,520	12,600	522,520	2,000	-	-	343,810	290,700	183,270	19,920	63,840
Planning Area II:													
Sublette	1,480	-	379,640	-	40,100	-	-	-	3,360	7,280	10,360	-	13,830
Fremont	-	-	59,400	-	-	-	-	-	-	-	-	-	-
Sweetwater	15,680	821,220	1,069,820	27,540	8,930	55,500	38,000	157,500	17,180	33,060	-	1,093,760	6,870
Lincoln	-	-	1,000	-	-	-	-	-	-	-	-	-	100
Subtotal	17,160	821,220	1,509,860	27,540	49,030	55,500	38,000	157,500	20,540	40,340	10,360	1,093,760	24,360
Planning Area III:													
Lincoln	2,220	-	475,780	-	44,140	-	-	15,140	62,270	23,340	-	232,080	17,930
Sweetwater	23,760	364,700	306,520	-	-	27,000	-	15,560	-	17,790	-	221,280	7,880
Uinta	1,160	-	527,650	-	55,200	3,000	-	43,280	52,600	113,790	-	179,150	4,010
Subtotal	27,140	364,700	1,309,950	-	99,340	30,000	-	73,980	114,870	154,920	-	632,510	29,820
Planning Area IV:													
Fremont	-	5,350	-	-	-	3,500	-	-	-	-	-	74,250	-
Sweetwater	7,780	449,960	34,360	-	14,930	48,370	40,000	-	-	-	-	1,361,240	-
Carbon	1,390	130,070	-	-	-	-	4,000	-	-	-	-	324,900	-
Subtotal	9,170	585,380	34,360	-	14,930	51,870	44,000	-	-	-	-	1,760,390	-
Planning Area V:													
Sweetwater	860	328,550	52,480	-	-	-	-	19,190	-	-	-	105,280	-
Carbon	-	178,930	360,210	15,000	112,040	28,000	-	56,170	83,000	27,790	-	119,750	1,740
Subtotal	860	507,480	412,690	15,000	112,040	28,000	-	75,360	83,000	27,790	-	225,030	1,740
TOTAL	96,250	2,532,250	4,211,380	55,140	797,860	167,370	82,000	306,840	562,220	513,750	193,630	3,731,610	109,230
													72,970

1/ Contains 12,880 acres of intermittent lakes and playas in Sweetwater and Carbon Counties.

Descriptions of each vegetal type or aspect are written in detail in the Base Working Paper (25). Each aspect and a brief description are described here only to indicate appearance and pattern within the basin's environment. Figure 3 further characterizes the vegetal and non-vegetal aspects and extent of each.

Halophytic Shrub

This vegetal aspect occupies low lying, drier desert relief. It often adjoins stream courses, valley bottoms and dry lakes. A variety of low growing, salt tolerant shrubs give a grey-green and sparsely vegetated appearance to the landscape. Greasewood and saltbush are the common shrubs in this aspect.

Low Shrub-Grass

This extensive aspect occupies the desert uplands in association with the halophytic shrub and shrub-grass aspects. Shrubs are usually less than one foot in height. Here again, the sparse grey-green appearance characterizes desert desolation and hardship. Common shrubs are various species of small sagebrush, rabbit brush, hopsage, horse brush, snake weed and saltbush.

Phreatophytic Shrub

This aspect occurs in a narrow band along the principal perennial stream course. Various species of willows and birch are the dominant plants. Grass and forbs are interspersed and provide total ground cover. This type is especially important habitat for moose, small mammals, and birds. Streambank stability and fish habitat quality depend upon satisfactory management of this aspect.

Cottonwood Bottoms

Cottonwood is a riparian aspect but not recorded on the Aspect Map. It is an extremely important streamside vegetation type for wildlife, streambank stability and esthetics. Cottonwood bottoms are

mostly elongated "stringer" types with occasional acreages of patches and clumps of trees.

Shrub-grass

The shrub-grass aspect occupies higher, often rolling and varied, relief than the halophytic shrub type. Ground cover is more complete and species more varied. Dominant in this aspect are various sagebrushes, with grasses and forbs forming the understory cover.

Mountain Shrub

The mountain shrub aspect is mapped in only three localities, although the species occurring in this aspect also appear elsewhere. This vegetal type occurs between the aspen and shrub-grass aspects. Slopes are often varied, steep and rocky. The setting is often visually pleasing during the fall months due to the brilliant display of color. The dominant shrub species are serviceberry, chokecherry, mountain mahogany, mountain maple and scrub oak.

Conifer

The conifer aspect is the forested land of the Wyoming Range, the Wind River Range, the Sierra Madre and the Uinta Range. In the lower elevations, conifer stands often appear sparse and disease or insect-ridden. This is especially true with lodgepole pine. At mid-elevation, stands are healthier, more uniform. At higher elevations near the alpine aspect, trees are scattered in groups and singles. Here trees and tree groups appear slowed in growth and stressed by wind, poor site, and short growing season.

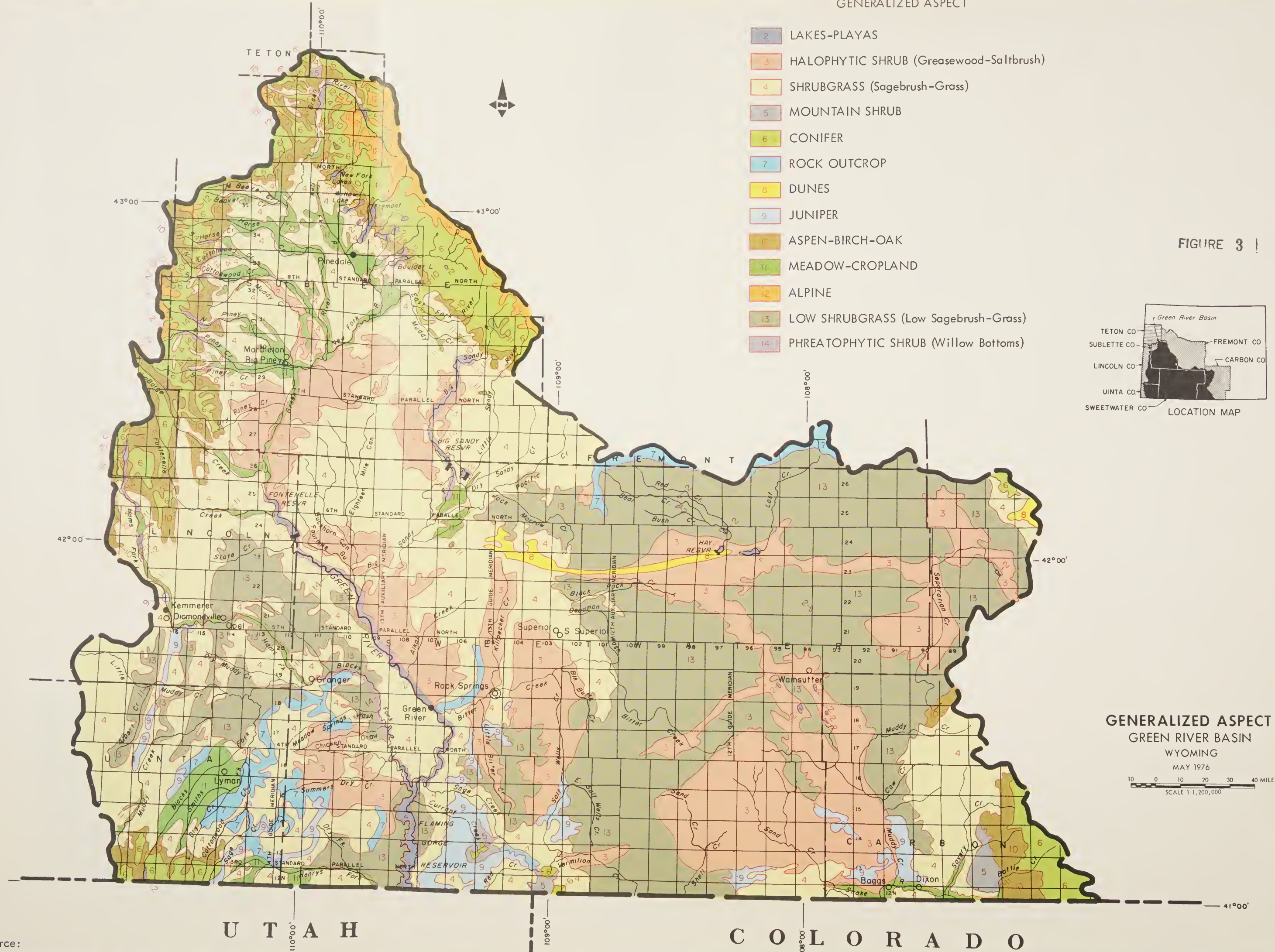
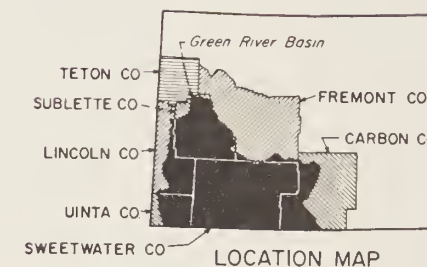
Juniper-Pinyon

Juniper generally occupies low rolling foothills where soils are shallow and rocky. Common species are Utah juniper, Rocky Mountain juniper and pinyon pine. The juniper aspect on broken relief is visually attractive, but is often repetitive and dull on low rolling relief.

GENERALIZED ASPECT

- 2 LAKES-PLAYAS
- 3 HALOPHYTIC SHRUB (Greasewood-Saltbrush)
- 4 SHRUBGRASS (Sagebrush-Grass)
- 5 MOUNTAIN SHRUB
- 6 CONIFER
- 7 ROCK OUTCROP
- 8 DUNES
- 9 JUNIPER
- 10 ASPEN-BIRCH-OAK
- 11 MEADOW-CROPLAND
- 12 ALPINE
- 13 LOW SHRUBGRASS (Low Sagebrush-Grass)
- 14 PHREATOPHYTIC SHRUB (Willow Bottoms)

FIGURE 3



Source:
Base map prepared by SCS, Portland Carto Unit.
Thematic detail compiled by Wyoming State Staff.

U.S. DEPARTMENT OF AGRICULTURE SOIL CONSERVATION SERVICE USDA-SCS-PORTLAND, OR 1976

M7-EN-22953A-4



Photo 5 Typical Flatland-barren or Sparsely Vegetated in Appearance.



Photo 6 Sagebursh, Lowbrush on Low Hills



Photo 7 Occasional Trees on Complex Topograph



Photo 8 Forested Mountains

Aspen-Birch-Oak

This aspect occurs generally between the sagebrush grass and conifer stands. Aspen occupies the more moist zones. Birch grows along the stream courses. Oak occurs almost exclusively in the foothills of the Sierra Madre. Quaking aspen dominates this type; various species of grass, forbs, and shrubs are abundant, and grow prolifically under the aspen stands. Aspen stands provide rich green color in the spring and summer, and yellow, gold and salmon colors in the fall.

Meadow-Cropland

The meadow-cropland aspect is mainly native grasses and developed agricultural land along reaches of the major streams. Common meadow grasses and grass-like species provide pastoral scenes and rich, deep green color from late spring through summer. Cropland is mostly alfalfa and improved grasses. Cropland adds to a pleasing rural and agricultural streamside pattern.

Alpine

The alpine aspect is the zone at and above timberline. It occurs only along the top ridges of the Wyoming Range and the Wind River Range. Broken mountaintop relief includes stonefield ridge tops, rock slides, cirque walls and snow fields. Sparse but hardy willow as well as several species of low growing shrubs, grasses and forbs are the principal plant forms. Lichens and moss grow on rocks and cliffs. The alpine aspect is the splendor of mountaintops seen from the valley floor and the vista from ridges conquered by climbers and hikers.

Lakes and Playas

Waters of permanent lakes are mostly devoid of vegetation, although eutrophication is causing some algal blooms in man-made reservoirs. Permanent natural lakes are mainly in the Wind River and Wyoming mountain ranges within the conifer and aspen aspects. Intermittent and dry lake beds (playas) are scattered throughout the high plains desert and especially within the Great Divide Basin. Playas often occur within the low shrub-grass and halophytic shrub aspects.

Rock Outcrop

Outcrop types are varied in this aspect from the bare slopes on the desert floor to granite block cliffs and canyons of the Wind River Mountains. Outcrop forms are hogbacks, cuerdas, mesas, flatirons, ridges, buttes and rims. They are generally layers of sedimentary rock resistant to soil erosion and soil formation. Common lithologic types are sandstone, siltstone and granite. Most outcrops are a visual attraction in the landscape as they provide contrast, color and variety.

Dunes

These are actively shifting sand dunes in the Great Divide Basin. They are elongated and lightly vegetated around their perimeters. Their low light-colored relief provides contrast in low shrub-grass and shrub-grass aspects.

Endangered or Threatened Flora

Recent research of the Rocky Mountain Herbarium, Laramie, Wyoming, has produced a list of plants to be considered within the Green River Basin. Six species and their collection sites are listed and described. The extent of habitat for each is not well known though the vicinity of occurrence is identified.

Threatened species.--Arabis demissa var. languida, "Eared Rockcress" Brassicaceae or Cruciferae (mustard family) - 2 miles southeast of Green River, Sweetwater County, collected June 1938, Rollins #2250.

Mertensia viridis var. dilatata, "Expanded bluebells". Collected several times in Albany, Carbon, Sublette and Lincoln Counties, North Central Colorado and in Utah. Plants of high rocky summits, Alpine to Subalpine Zone, 9,000 to 12,000 feet elevation.

Oryzopsis hymenoides var. contracta, "Oryzopsis Contracta", narrowed ricegrass, Poaceae or gramineae (grass family) - proposed for removal from the list. Author believes the Smithsonian Institute would not propose this species as "threatened" under its correct name. Collections over 150 throughout Albany, Carbon and Sweetwater Counties, especially near Bosler, Big Hollow, Shirley Basin, Delaney Run, Rawlins and Wamsutter locally common. Plant associated with O. hymenoides on sandier areas of the Desert and Basin Zone 5,500 to 7,000 feet.

Endangered species.--Astragalus proimanthus, "Precocious orophaca" Fabacea or leguminosae (pea family) - Sweetwater County, 7,100 feet, collected June 13, 1961, 3 miles north of McKinnon on Henrys Fork of the Green River. Barnaby #13,185, June 13, 1946, 6 miles north of McKinnon, Ripley and Barnaby #7913. Plants on summits of barren, white shale hills and on ridges of gullied shale bluffs. Foothills Scrub Zone of Uinta Mountains at 6,500-7,100 feet. Flowers in May. Fruit ripe by July.

Haplopappus contractus, "Contract goldenweed: Asteraceae or compositae (sunflower family) - possibly extinct species. Collection: known only from a specimen collected near Fort Bridger, Wyoming, Uinta County, in 1873 by Carter. Probably grows on moist, saline soils of the Desert and Basin Zone near 6,600 feet elevation.

Lesquerella macrocarpa, "Large fruit bladderpod" Brassicaceae or Cruciferae (mustard family) - probably extinct species. Collected in Sweetwater County, Bush Ranch, June 10, 1900, Avon Nelson #7081; Sweetwater County 45 miles north of Point of Rocks, dry soil, May 21, 1901, Merrill and Wilcox #568. Plant on naked ridges and flats, Red Desert Zone, 6,700 feet elevation.

Streams and River Systems

Streams and river systems within the high desert plains are zones of scenic contrast and year-long human and livestock use and occupancy. Seasonal recreational uses like fishing and river floating are important also. In the mountains and forests, streams and rivers are but one element of pleasing scenic landscapes. Here, man's use and occupancy of streams and rivers are less apparent and seasonal. In some areas, however, recreation and livestock concentrations are apparent by the deep-rutted trails, debris and use or mutilation of vegetation.

Permanent and intermittent stream and river drainage systems are quantified in miles and in acres. Acreage includes riparian vegetation. Table II-2 displays miles and acres by basin county. Stream and river systems comprise 1.3 percent of the basin area.

Riparian vegetation complements a pastoral hayland and pastureland setting. Similarly in adjoining desert landscapes, riparian vegetation provides visual relief from repetitious desert scenery. All streamside vegetation is not in good condition, however. The Field Party estimates that about 20 percent of the streambank vegetation in pastoral and

desert settings has been visually degraded by one or more man-caused activities or by natural events.

Table II-2 River and Stream Miles and Areas
Green River Basin, Wyoming (2) 1/

County	River and Stream Miles	Riparian Vegetaion Acres
Lincoln	970	24,270
Sublette	3,400	105,260
Sweetwater	640	36,210
Uinta	630	4,010
Carbon	600	12,450
Total	6,240	182,200

1/ Numbers in parenthesis throughout this report refer to sources listed in the Selected References where further information can be obtained.

Stream Esthetics

The Wyoming Game and Fish Commission's River, Stream and Lake Inventory was used to characterize river and stream esthetics. The Commission's major emphasis has been directed toward classifying Wyoming's fishery resource. Crews have periodically inventoried four major stream conditions -- relative fish productivity, esthetic quality, availability and fisherman use. The combination of these and other factors with emphasis on fish productivity has resulted in an overall fisheries and fishing classification. Detailed definitions and explanation can be found in the Fisheries Habitat section of this report. Only one factor, esthetic quality, is discussed in this section.

It is also essential to mention how important perennial flows are in judging any stream under the Commission's inventory system. Flow modification or curtailment sorely limits the application of this system.

River and stream esthetics were first classified by the Wyoming Game and Fish Commission in 1961. The survey was last updated in March 1977. Survey crews rated and re-rated stream esthetics under one of five classes. Class definitions are as follows:

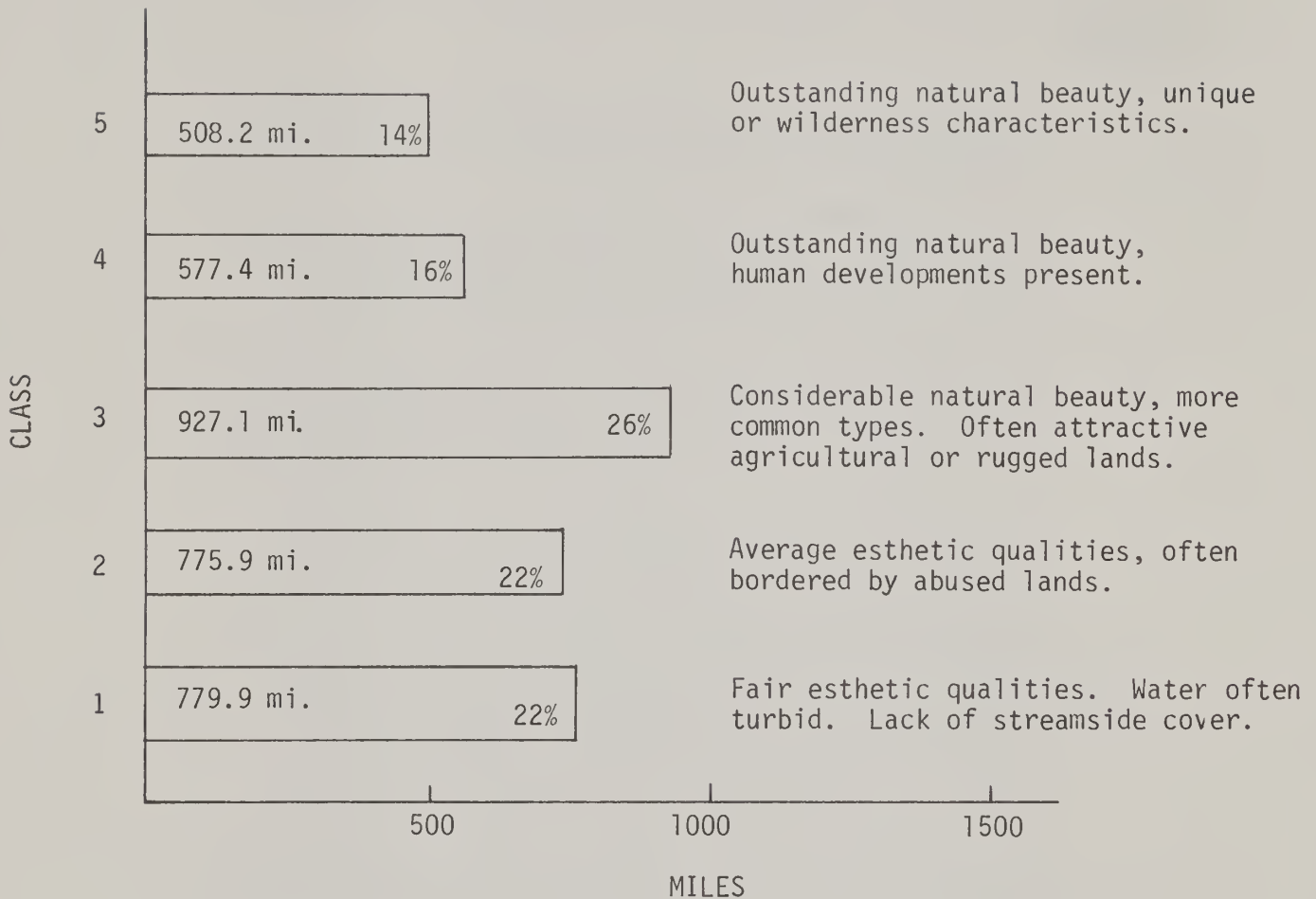
Esthetics
Rating

- 5 A stream of outstanding natural beauty, usually of a unique type and possessing wilderness characteristics. Streams usually clean and clear.
- 4 A stream comparable to 5 but lacking wilderness characteristics. Presence of human developments such as roads, farms or commercial establishments usually comprise the chief difference between 5 and 4.
- 3 A stream of considerable natural beauty but of a more common type than listed under 5 and 4. Clean and usually clear streams flowing through attractive agricultural areas or rough lands with picturesque scenery.
- 2 An area with average scenic or esthetic qualities. This type of stream is fairly common, usually with clean waters and bordered by unabused land. Scenery, while not unusual or outstanding, is appealing.
- 1 A stream of fair esthetic qualities. Water is often turbid. The surrounding country has only mediocre scenic appeal and is of common occurrence. A lack of streamside cover is apparent. Mud banks are common and streamflows occasionally may become so low as to expose extensive mud flats and sand bars. Noxious domestic and industrial wastes may occur. This type of stream's primary esthetic appeal usually lies in the fact that it offers local people an opportunity to get outdoors near some water.

In the Green River Basin, 3,568.5 miles of stream were classified for esthetics. Thirty percent or 1085.6 miles have outstanding beauty. Twenty-two percent or 779.5 miles have fair esthetic qualities and have been degraded by man's activities or natural occurrences.

Chart II-2 shows the miles and class of basin streams and rivers that have been classified for esthetics. Similar charts for each county in the basin are located in Appendix 2.

Chart II-2 Stream Esthetics (miles and class),
Green River Basin, Wyoming



Stream Availability

The relative availability of streams and rivers for viewing, fishing and recreation opportunities characterizes the potential for public appreciation and use. Again, the Wyoming Game and Fish Commission has surveyed the availability of fishing streams in this context. Availability was rated under one of five classes as follows:

Availability

Rating

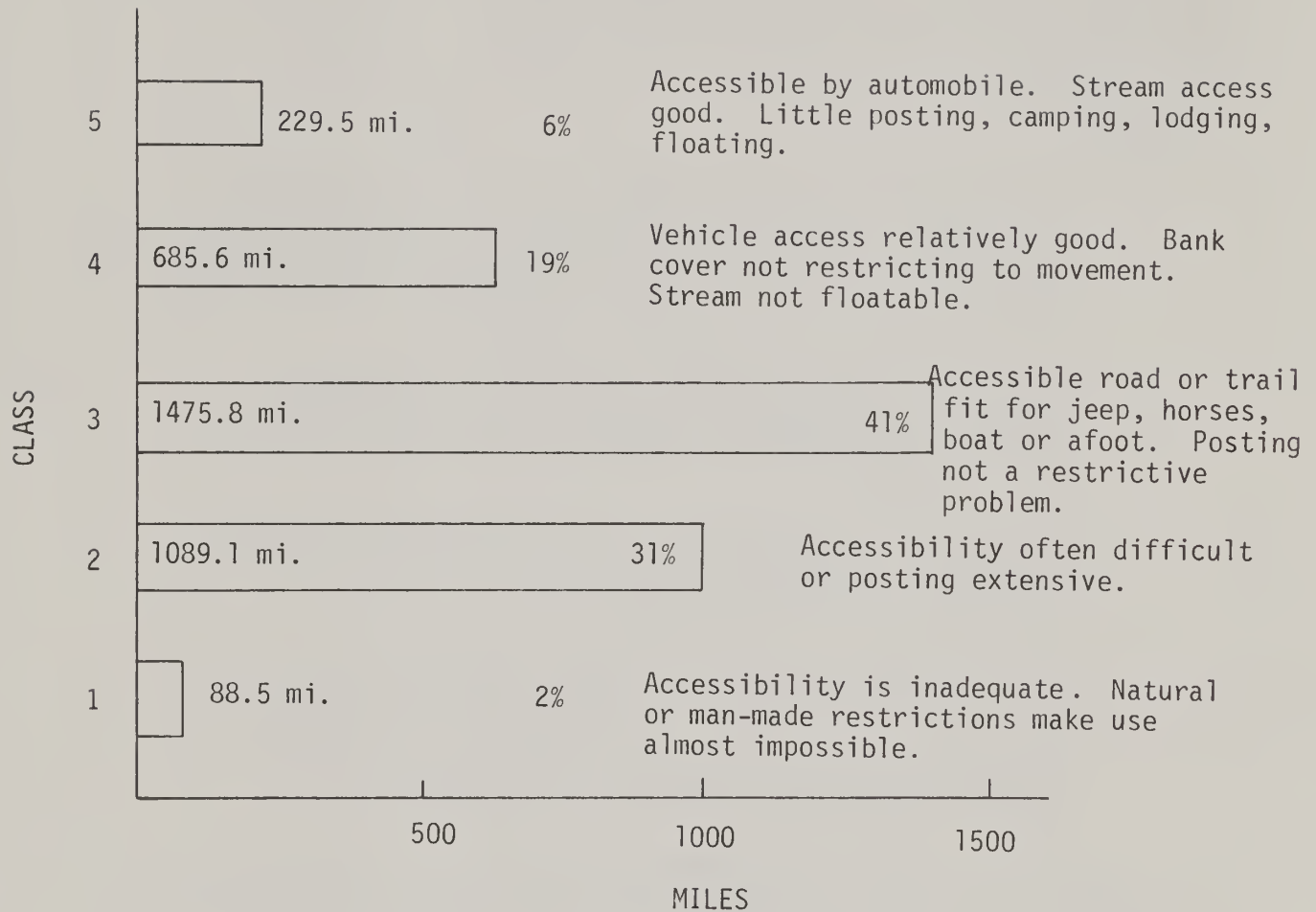
- 5 Accessibility to fishing waters by road is satisfactory for modern cars (not excessive such as a highway bordering the stream). Stream access in terms of posting and availability to fisherman use is very good. Camping and lodging opportunities available, stream is floatable.
- 4 Vehicular access relatively good (may be excessive as described in 5), posting not extensive, streambank cover not restrictive to fisherman utilization. Stream not floatable.
- 3 Accessible road or trail is fit or appropriate for jeep, horseback or afoot. Posting not considered as an important restrictive problem.
- 2 Accessibility is often difficult or posting so extensive as to seriously restrict fisherman access.
- 1 Accessibility is inadequate as natural or man-made restrictions cause fisherman utilization to be almost impossible.

Streams and rivers are reasonably available for public use and viewing in Wyoming's Green River Basin. Sixty-seven percent or 2,390.9 miles are available and accessible to most of the public. Thirty-three percent or 1,177.6 miles are less available or not available for public use and viewing. Chart II-3 shows the miles and class of basin streams and rivers that have been classified for availability. Similar charts for each county in the basin are located in Appendix 3.

Lakes, Reservoirs and Other Flat Water

Alpine lakes of the Jim Bridger Wilderness Area comprise the majority of flat water areas in number and acreages. More than 1,300 lakes dot the rugged granite landscape of the wilderness area (4). Because many

Chart II-3 Stream Availability (miles and class),
Green River Basin, Wyoming



of these lakes are small, the lesser number of lakes reported by the March 1977 Wyoming Game and Fish Commission's Lakes and Streams Inventory is used in this report. Lakes under the Wyoming Game and Fish classification are one acre in size or larger (Table II-3) (3).

Table II-3 Lakes and Reservoirs
Green River Basin, Wyoming (2)

County	: :	Alpine Lakes and Reservoirs	:	Lowland Lakes and Reservoirs	:	Grand Total Acres
	:	<u>No.</u>		<u>No.</u>		
	:	<u>Acres</u>		<u>Acres</u>		
Lincoln	:	22		5	9,680	10,300
Sublette	:	605		9	2,690	30,800
Sweetwater	:	0		47	39,900*	39,900
Teton	:	1		0	0	100
Uinta	:	5		33	1,450	2,000
Carbon	:	1		9	230	250
Total	:	634		103	53,950	83,350

*Includes intermittent lakes in Great Divide Basin.

Flat water esthetics vary from nearly pristine and unique in alpine settings to a degraded few lowland waters. Riparian vegetation and shoreline esthetics are generally pleasing and relatively undegraded.

Wilderness and Roadless Areas

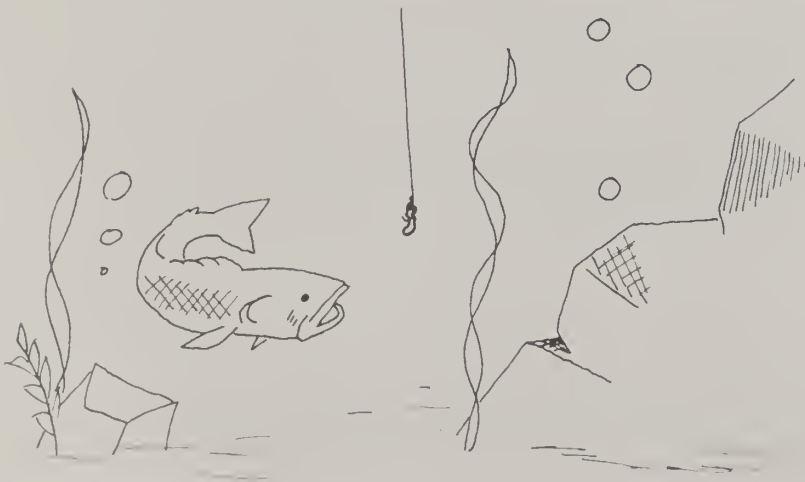
Wilderness and roadless areas lie within portions of two national forests in Wyoming's Green River Basin. An estimated 905,300 acres are involved.

Designated Wilderness

The Jim Bridger Wilderness Area was designated a primitive area under a Secretary of Agriculture Regulation in 1931. Formal designation



Photo 9 - Boating and fish, Fremont Lake.



as a wilderness area occurred September 3, 1964, under the 1964 Wilderness Act. The Bridger Wilderness Area contains 383,300 acres of the west slope of the Wind River Mountain Range and extends 80 miles along the Continental Divide.

The wilderness area provides outstanding opportunities for recreational experience and scientific study. Rugged granite mountains are pocketed with hundreds of glacial lakes and offer outstanding wilderness recreational opportunities. Scientific study is opportune due to glacial evidence, exposed geology, vegetal variety and active glaciers.

The Bridger Wilderness Area is currently managed under an approved 1975 management plan (4). Eleven management units have been delineated. Nine units have uses that do not conform with wilderness values or the 1975 Management Plan.

Roadless and Undeveloped Areas

National Forest lands in the basin are currently undergoing a two-year review and evaluation. This study is nationwide and is at the midway point. It is formally known as the U.S. Forest Service Roadless Area Review and Evaluation (RARE-II) Program. Study completion and decisions are scheduled for late 1978.

The RARE-II Program is a four phase study. In Phase I lands were inventoried, mapped and presented to the public and agencies for initial public response. The inventory list, public comments and criteria for evaluation were published and made available to the public and agencies. Presently, Phase III which involves preparing an environmental impact statement is in process. The draft statement will present completed evaluation and proposed programs and decision options. A final environmental statement is to follow intensive public involvement. The final statement should be available in late 1978. Phase IV is the decisionmaking phase, and it is to result in roadless areas being:

1. Legislatively proposed for wilderness classification;
2. Adjudged as requiring no further consideration for wilderness, thus, immediately making them available for other multiple uses; or

3. Remanded to the regular land management planning process for consideration of all suitable uses, including wilderness.

Under RARE-II process approximately 522,000 acres of National Forest lands have been inventoried and are under evaluation in Wyoming's Green River Basin. Specifically, 13 areas were identified as follows:

Bridger-Teton National Forest

<u>Area No.</u>	<u>Name</u>	<u>Estimated Gross Area in Basin (Acres)</u>
4102	Gros Ventre	85,760
4110	Southern Wyoming Range	77,360
4112	Commissary Ridge	117,490
4901	Greenwater-Sweetwater	133,320
4902	Seven Lakes	33,870
4113	Nugent Park West	4,580
4116	Gypsum Creek	17,300
4114	Hams Fork Ridge	13,950

Medicine Bow National Forest

<u>Area No.</u>	<u>Name</u>	<u>Estimated Gross Area in Basin (Acres)</u>
093	Big Sandstone Creek	6,720
094	Little Sandstone Creek	5,650
095	Battle Creek	8,960
092	Singer Peak	5,120
087	Huston Park	11,770
		<u>521,850</u>

The Rock Springs and Rawlins Bureau of Land Management (BLM) Districts are currently proposing two roadless and undeveloped areas for special management as primitive or natural areas. These are the adjoining Adobe Town and Red Creek areas. An estimated 121,000 acres are involved.

In the Pinedale BLM District, Scab Creek is being considered as a primitive area. This 7,000 acre tract borders the Bridger Wilderness Area and is located east of Pinedale, Wyoming.

In total, there are 1,033,300 acres of wilderness, primitive, roadless, and undeveloped area on National Forest and National Resource land. This acreage is about eight percent of the total basin acreage.

Species

The Green River Basin supports a high quality, cold water trout fishery. Fishing locations range from alpine lakes and streams to lowland reservoirs and rivers. Fishery habitat consists of 2,954 miles of fishable streams and rivers and 83,350 acres of ponds, lakes and reservoirs.

Predominant game fish species include ten species of salmonoids (primarily trout), smallmouth bass and catfish. Species are cutthroat trout, rainbow trout, brown trout, brook trout, lake trout (mackinaw), California golden trout, kokanee, grayling, smallmouth bass, catfish and whitefish. Bass and catfish are limited in numbers and distribution (see Table II-4 for species and their importance). Nongame fish include carp, suckers, dace, chubs and sculpins. Nongame fish are rarely used consumptively by humans, but fulfill an important role as a forage fish for birds, mammals and predaceous fish (11).

In the game fish subgroups, cutthroat trout is very important. Four Green River Basin streams support Colorado River Cutthroat trout, a rare subspecies of cutthroat trout. Recent studies indicate more extensive distribution in the Wyoming Range streams and in Upper Blacks Fork drainage. Colorado River cutthroat trout inhabit Beaver Dam Creek, Hollow Creek, Horse Creek and Archie Creek. The headwaters of the Little Snake River drainage in Carbon County support populations which best represent this subspecies.

Many fine German brown trout fisheries occur in the basin. Important brown trout fisheries include the Green River, Big Sandy Reservoir, Soda Lake, Big Sandy River and Flaming Gorge Reservoir. Brook trout are abundant in the upper Green River Basin lakes and streams. Lake trout or mackinaw were introduced in 1939 and have become a prized trophy fish in Wyoming. Most notable of several lakes that support self-sustaining mackinaw populations is Fremont Lake in Sublette County. Golden trout were stocked widely by artificial propagation during the early 1900's in a number of high mountain lakes in Wyoming. Several lakes of the Jim Bridger Wilderness are famous for their golden trout populations. Kokanee salmon constitute significant populations in Fremont Lake and

Table II-4 Relative Importance of Fish Species
Green River Basin, Wyoming

Fish	Importance
Cutthroat trout	National
Brown trout	National
Brook trout	Regional
Lake trout (Mackinaw)	National
California gold trout	National
Kokanee	Local
Grayling	Statewide
Bass	Local (minor)
Catfish	Local (minor)
Whitefish	Local
Rainbow trout	Statewide
<u>Endangered Fish</u>	
Kendall Warm Springs dace	International
<u>Rare</u>	
Colorado River cutthroat	National

International importance: (1) endangered or rare species; (2) the nucleus of any animal population or any international regulated species whose population is of concern in more than the United States.

National importance: (1) animals whose populations are of more importance in the study area than anywhere else in the United States; (2) an animal that is rare or extremely uncommon in the contiguous 48 states, but may be found more readily elsewhere in North America.

Regional importance: Includes animals whose populations are great enough to attract large numbers of people from surrounding states where the same animals are found but in fewer numbers.

Statewide importance: Animals attract people throughout Wyoming but does not attract many people from outside the state.

Local importance: Animals enjoyed primarily by the local people and does not attract many from Wyoming for the same purpose.

Flaming Gorge Reservoir. Grayling are an important novelty species in the Green River basin with Meadow Lake near Pinedale the most noted grayling fishery.

Limited numbers of smallmouth bass occur in Flaming Gorge Reservoir. Similarly, catfish are limited in number and are known only in the Little Snake River.

Both Wyoming and the nation list Kendall Warm Springs dace as endangered. These dace are unique to Kendall Warm Springs. This dace is a rare subspecies of fish within a very limited warm water habitat.

Streams and River Habitat

Fisheries habitat in the Green River Basin is best characterized by the Wyoming Game and Fish Commission's River, Stream and Lake Inventory. The Commission's inventory and update work since 1961 has produced a very creditable fishery data base. The most recent update, March 1977, was available for this writing.

Information for each of Wyoming's fishing streams are updated periodically for the following information: (1) stream name and code number; (2) minimum miles supporting a fishery; (3) total stream miles; (4) land ownership; (5) esthetic qualities; (6) availability for public use; (7) relative productivity; (8) stream class; (9) present fishing pressure; (10) estimated fishing capacity; (11) operational habitat; (12) recommended minimum flows; and (13) access needs for fishermen. It must be noted that certain important information is not readily apparent in the inventory criteria and data compilation. The inventory does not reflect the degree of maintenance of stream channels, streambanks and habitat conditions. Likewise, whether or not minimum or low flows are maintained cannot be discerned from the inventory.

An overall stream classification is assigned to each fishing stream. The classification is based upon a combination of three ratings: (1) stream esthetics; (2) stream availability; and (3) fish productivity. (Esthetics and availability were defined under the Streams and Rivers Section of this report.) The numerical ratings of 1 to 5 assigned to each of the three ratings are weighted, multiplied and added as follows to assign overall fishery classification:

(esthetics X 1) + (availability X 2) + (productivity X 4) =
fishery classification rating.

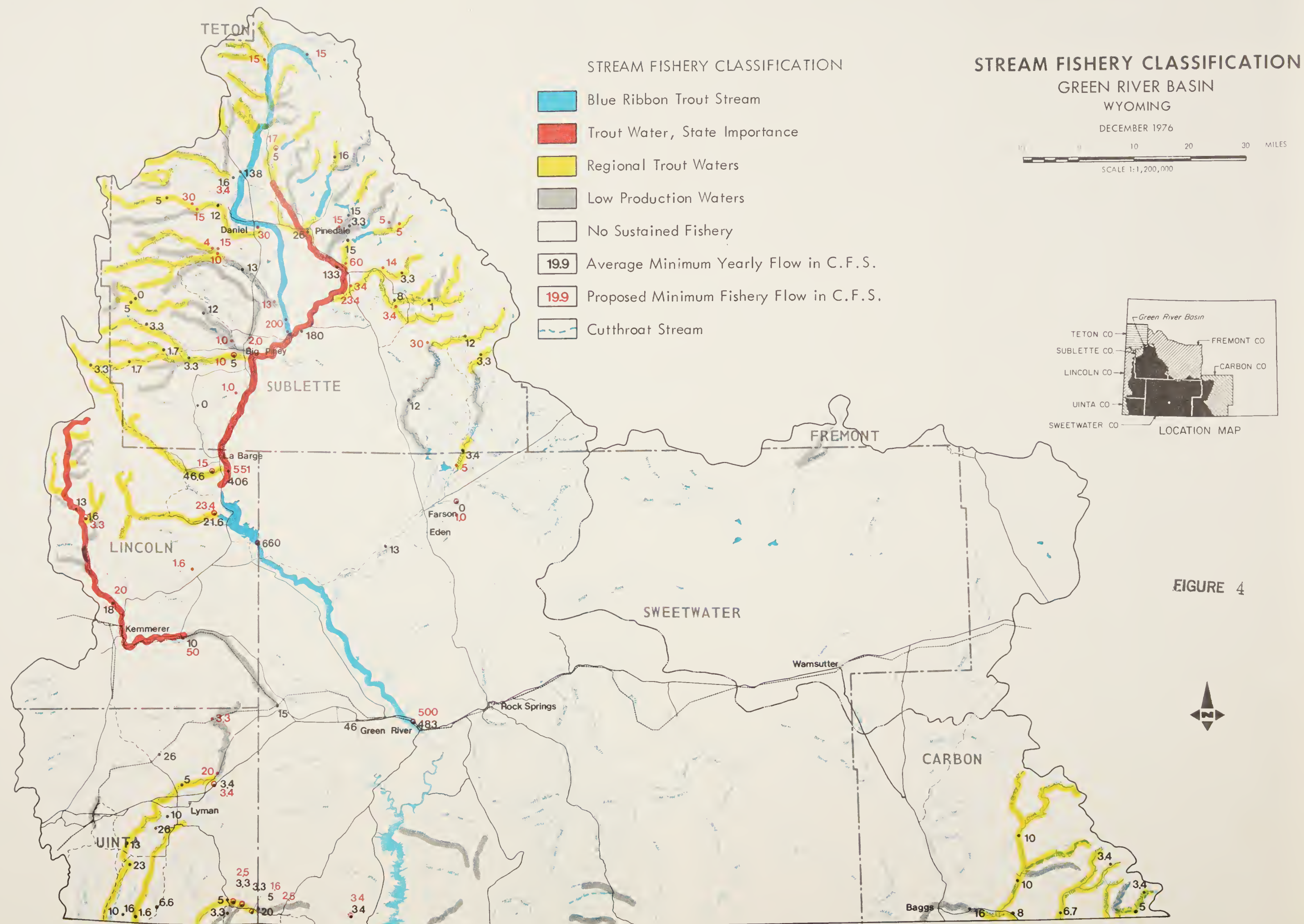
A rating of:

31-35 is Class 1	Blue-premium trout waters, fisheries of national importance (Figure 4).
25-30 is Class 2	Red-very good trout waters, fisheries of state-wide importance.
18-24 is Class 3	Yellow-important trout waters, fisheries of regional importance.
11-17 is Class 4	Gray-low production waters, fisheries frequently of local importance but generally incapable of sustaining substantial fishing pressure.
7-10 is Class 5	Not colored- very low production waters, often incapable of sustaining fisheries.

Figure 4 is a map of the basin which shows the location and relative length of each of classified fishery streams in the Green River Basin. The Forest Service and Bureau of Land Management fisheries biologists have surveyed many of the streams on National Resource and National Forest lands and have expanded on the information presented in this report. The information and data developed by these two agencies is available but was not included here because it is too detailed for this type of report. However, Table II-5 presents minimum stream fishery miles by ownership or administration and stream fishery classification. Chart II-4 shows the relative importance of each stream fishery classification in terms of stream miles. Table II-6 shows the number of classified stream miles by county and fishing capacity. The same information that is shown in Chart II-4 and Table II-6 is available for each county in the basin and is presented in Appendix 4.

Lakes and Reservoirs Habitat

Flat water fisheries in the basin support quality trout populations. Alpine lakes contain sought-after cutthroat, brook and golden trout. Larger, more accessible alpine lakes like Fremont, Boulder and New Fork are an ice fisherman's delight and summer campers dream as they fish



Source:
Base map prepared by SCS, Portland, Oreg. Unit from USGS 1:1,000,000 National Atlas.
Thematic detail by Wyoming Game & Fish Commission, Revised 1976 & USGS Stream
Gauge Records, 1932-Present.

U.S. DEPARTMENT OF AGRICULTURE SOIL CONSERVATION SERVICE

Cooperative River Basin Studies
State Engineer, Wyoming Water Planning Program

Table II-5 Minimum Stream Fishery Miles by Ownership or Administration and Fishing Stream Classification, Green River Basin, Wyoming

Fishery Classification	BLM	FS	State/ Local	Private	Other	Total
<u>Class 1</u>						
Blue ribbon	18.8	17.0	8.6	88.5	33.1	166.0
<u>Class 2</u>						
Very important	16.0	41.8	10.5	117.5	7.3	193.1
<u>Class 3</u>						
Important	60.5	482.7	37.1	494.6	27.0	1,101.9
<u>Class 4</u>						
Low production	203.2	579.6	35.7	434.7	0.0	1,253.2
<u>Class 5</u>						
Very low production	126.0	18.9	12.8	81.6	0.0	239.3
Total	424.5	1,140.0	104.7	1,216.9	67.4	2,953.5

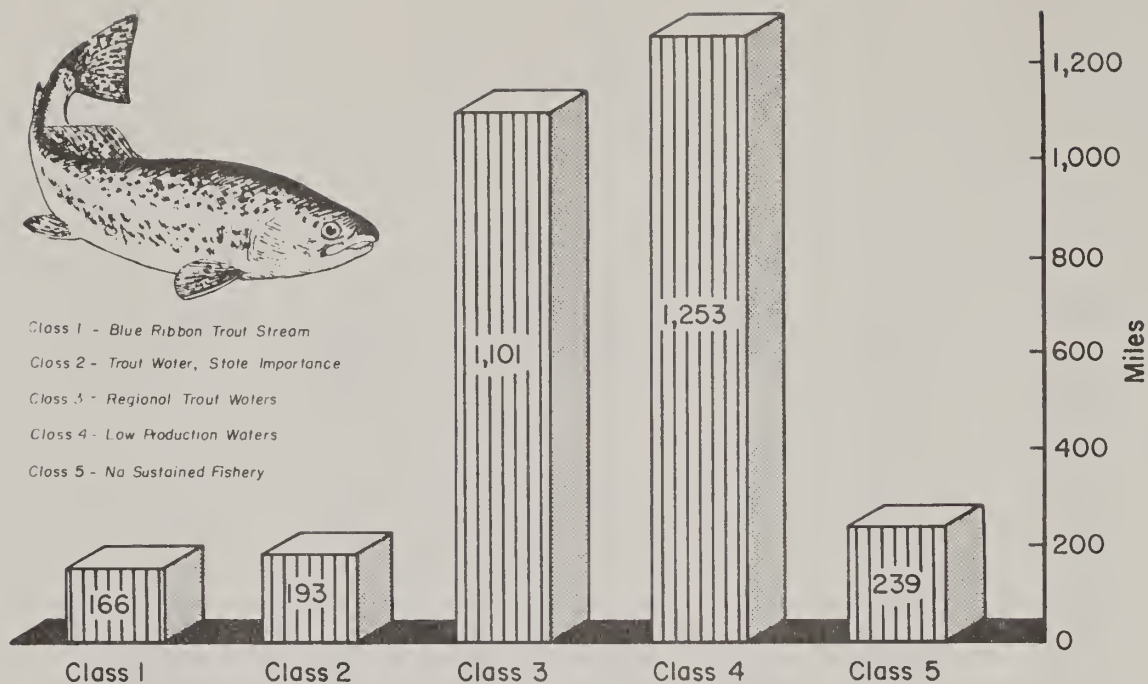


Chart II-4 Fishing stream quality, Green River Basin, Wyoming

Class 1 - Blue ribbon - premium trout waters. Of 166.0 miles of blue ribbon stream and river, 73 miles support high fish populations of better cold water game fish, and the fishing water is large enough to support heavy to moderate fishing pressure. The other 93.0 miles support a moderate game fish population. Fishing waters are moderate in size and can support much fishing pressure.

Class 2 - Red ribbon - very good trout waters. Of 193.1 miles of very good trout waters, 184.1 miles support moderate game fish populations and are moderate in size. They can withstand much fishing pressure. Nine miles are generally small but productivity is good and can withstand heavy to moderate fishing pressure. In some cases waters are large, and productivity is low enough so hatchery stocking is required to maintain success.

Class 3 - Important trout waters. Of 1101.9 miles of important trout waters, 45.0 miles support moderate game fish populations and are moderate in size. Productivity is high, and these waters can withstand much fishing pressure. Of the remaining, 706.6 miles are generally small with good productivity and can support heavy to moderate fishing pressure, and 350.9 miles are small and/or cannot withstand much fishing pressure.

Class 4 - Low production waters, local importance. Of 1253.2 miles of low production waters, 63.0 miles are generally small with high productivity and can withstand heavy to moderate fishing pressure. Of the remaining, 657.7 miles are generally small and cannot withstand much fishing pressure; and 532.5 miles support low populations of game fish, if any, and cannot support successful long term fisheries.

Class 5 - Very low production waters. Of 239.3 miles of very low production waters, all mileage supports low populations of game fish, if any, and cannot support successful long term fisheries.

Table 11-6 Fishing capacity of streams by County and Class of Streams,^{1/} Green River Basin, Wyoming, 1974 ^{4/}

County	Class 1		Class 2		Class 3		Class 4		Class 5	
	Miles	Capacity	Miles	Capacity	Miles	Capacity	Miles	Capacity	Miles	Capacity
Carbon	0.0	0.0	0.0	0.0	130.0	13,910.0	27.0	756.0	5.0	0.0
Lincoln	2.0	900.0	99.7	39,294.0	111.2	11,952.7	185.8	5,250.6	88.6	483.0
Sublette	93.0	46,500.0	90.4	24,288.6	712.4	78,125.9	744.3	32,870.8	59.0	42.0
Sweetwater	70.0	46,935.0	0.0	0.0	11.0	690.0	88.5	3,622.2	150.5	0.0
Uinta	0.0	0.0	0.0	0.0	87.0	14,623.0	153.0	3,704.2	75.5	1,127.6
Basin Totals	165.0	95,335.0	190.1	63,582.0	1,051.6	129,301.6	1,198.6	46,303.8	378.6	1,652.6

Basin Total Aggregation of Streams

County	All stream classes	
	Miles	Capacity
Carbon	162.0	14,666.0
Lincoln	487.3	57,880.3
Sublette	1,699.1	181,827.3
Sweetwater	320.0	51,247.2
Uinta	305.5	19,454.8

Basin Totals 2,973.9 ^{3/} 325,075.6

1/ Wyoming stream classification:

Class 1 - premium trout waters; fisheries of national importance.

Class 2 - very good trout waters; fisheries of statewide importance

Class 3 - important trout waters; fisheries of regional importance.

Class 4 - low production waters; fisheries frequently of local importance, but generally incapable of sustaining substantial fishing pressure.

Class 5 - very low production waters; often incapable of sustaining a fishery.

2/ Fishing capacity - minimum miles x present pressure x factor = fisherman day capacity.

3/ Data obtained from measuring on ERTS Satellite imagery indicator 5,810 miles of stream.

4/ Data on Table 11-G is 3 years older than data on Chart 11-4 and differs due to updating by field inventory.

Source of Information: Game and Fish Department, State of Wyoming, Cheyenne, Wyoming (June 26, 1974).

for lake trout. Mackinaw is the most sought-after fish in these lakes.

The largest lowland reservoirs are Flaming Gorge and Fontenelle on the Green River. They are trolled and bank-fished for long seasons each year.

Lakes and reservoirs are also classified in the Wyoming Game and Fish Commission's River, Stream and Lake Inventory. Flat water area by type, number, size and capacity are shown in Table II-7 for county basin lands. In summary, the majority of flat water fishing takes place on lowland reservoirs (primarily on Flaming Gorge Reservoir). Alpine lakes receive the second greatest pressure. Fishing use basinwide is greater on reservoirs and lakes than it is on streams and rivers.

Wildlife Resources

Wildlife habitat in the Green River Basin supports a wide variety of mammals, birds, amphibians and reptiles. Extensive habitat is available for many species in the high plains desert and peripheral mountain ranges. Elk, deer, antelope and sage grouse are examples of revered game animals that occupy extensive habitats within the 13.4 million acre Green River Basin.

Wildlife species and their habitats are discussed under group headings. Discussion of animal species are as brief as possible so as to emphasize habitat area and conditions later in the report. Mammals are discussed under eight subgroups: (1) big game; (2) trophy game animals; (3) small game animals; (4) furbearers; (5) predators; (6) protected animals; (7) rodents; and (8) wild and free-roaming horses.

Mammals

Big game. -- Mule deer, elk, antelope, moose, Rocky Mountain bighorn sheep and whitetail deer are considered big game. All except whitetail deer contribute significantly to hunting enjoyment and bag limits as well as to nonconsumptive recreation. Mule deer inhabit the entire basin. Deer concentrate on seasonal ranges or along traditional migration routes at various times throughout the year. Elk are an

Table 11-7 Fishing capacities of lakes and reservoirs by County, Green River Basin, Wyoming, 1974

County	Natural Alpine Lakes			Alpine Reservoirs			Natural Lowland Lakes			Lowland Reservoirs		
	Number	Acreage	Capacity	1/ Number	Acreage	Capacity	2/ Number	Acreage	Capacity	Number	Acreage	Capacity
Carbon	1	14.0	15.0	0	0.0	0.0	0	0.0	0.0	0	0.0	0.0
Lincoln	22	101.2	15.0	0	0.0	0.0	0	0.0	0.0	5	9,618.0	101,570
Sublette	598	21,454.6	187,218.4	7	5,027.3	147,059.0	1	312.5	15,937.5	8	2,528.3	8,960
Sweetwater	0	0.0	0.0	0	0.0	0.0	1	55.0	0.0	6	27,882.8	12,896
Teton	1	72.3	578.4	0	0.0	0.0	0	0.0	0.0	0	0.0	0
Uinta	3	14.0	13.0	2	527.5	374.0	0	0.0	0.0	3	49.0	113
Basin Totals	625	21,656.1	187,839.8	9	5,554.8	147,433.0	2	367.5	15,937.5	22	40,078.1	123,539

Basin Total Aggregation of Water Bodies				
County	Number	Acreage	Capacity	
Carbon	1	14.0	15.0	
Lincoln	27	9,719.2	101,585.0	
Sublette	614	29,322.7	359,175.3	
Sweetwater	7	27,938.4	12,896.2	
Teton	1	72.3	578.4	
Uinta	8	590.5	500.4	
Basin Totals	658	67,657.1	474,750.3	

1/ Lake fishing capacity = total acres x pressure x factor.

2/ Reservoir fishing capacity = minimum habitat x pressure x factor = fisherman day capacity.

3/ Flaming Gorge Reservoir alone covers 48,200 acres in Sweetwater County, Wyoming; tables elsewhere in this report also show different figures; however, to maintain consistency with the state report from which these figures were derived, Game and Fish Department figures are used here.

Source of Information: Game and Fish Department, State of Wyoming, Cheyenne, Wyoming (June 26, 1974).

important big game species in the Green River Basin. Several herds inhabit mountain lands. Uniquely, one herd inhabits desert lands in the Steamboat Mountain area in northeastern Sweetwater County (Table II-8).

A very important Shiras moose population occupies characteristic willow bottomland and forestland ranges. Moose harvest in the basin by 1974 exceeded the combined harvest of Idaho, Montana and Utah. The base population in excess of 2,000 is greater than anywhere else in the world.

Antelope roam extensively over much of the sagebrush-grass, greasewood-saltbush and low sagebrush habitat types. Antelope populations are not high, but are comparable to those of other western states. Their densities are greater than the densities found in most western states. Bighorn sheep inhabit the Wind River Range on about 7,000 acres of alpine and montane habitat types. Sheep range is limited and the animals are intolerant of human disturbance or development by man.

Whitetail deer are very limited in numbers and distribution in the basin. Only one small herd is known and it inhabits the Little Snake River drainage in the Baggs area. Maps of big game habitat are located on the following pages.

Trophy game animals. -- Trophy game animals are black bear, grizzly bear and mountain lion. All are relatively few in number. Black bear and mountain lion are hunted under license and permit systems. Black bear inhabit mostly mountainous areas within the basin. They are normally trophy game animals, but when they threaten or damage livestock and property, they are controlled as predators. Occasionally, bears must be removed as nuisances in the vicinity of recreation areas (Table II-9).

Grizzly bear habitat coincides roughly with the Jim Bridger Wilderness. This habitat must be listed as potential due to the lack of recent sightings. Although grizzlies were known to roam much of the Green River Basin in earlier days, they are now classified as threatened on the U.S. Department of Interior's list of endangered and threatened species. Any attempt to reintroduce them into the basin would meet strong protest from livestock interests.

Mountain lions roam the entire basin. Reliable sightings and infrequent harvest support this fact. Mountain lions were placed on the trophy game list and first hunted under license in 1974.

Table II-8 Big Game Species, Green River Basin, Wyoming

Big Game	Importance	Habitat	Limiting Habitat	1973 Harvest
		<u>Acres</u>	<u>Acres</u>	<u>No.</u>
Mule deer	Regional	Entire basin	5,194,900	6,351 deer
			Winter range	11.3% of Wyoming harvest
Elk	National	Elevations above 6,500 feet generally	2,074,300	3,498 elk
			Winter range	15.9% of Wyoming harvest
Antelope	Regional	-	4,139,300	2,288 antelope
			Winter range	6.2% of Wyoming harvest
Moose	International	-	1,696,300	651 moose
			Winter range	43.9% of Wyoming harvest
Bighorn sheep	National	7,000	-	11 sheep
Whitetail deer	Local	-	-	Unknown

Table II-9 Trophy Game Species,
Green River Basin, Wyoming

Trophy Game	: Relative : Importance	: Habitat : : Area	: 1974 : : Harvest	: Nonconsump- : tive Use
		<u>Acres</u>	<u>No.</u>	<u>Visitor Days</u>
Black bear	: Regional	700,000	19	No estimate
Grizzly bear	: National	500,000	None	No estimate
Mountain lion	: Local	Entire basin	None known	No estimate

Small game animals. -- Small game animals include cottontail rabbits, snowshoe hares, and red squirrels. Cottontail rabbits occur throughout most of the Green River Basin. Low brush and pinyon juniper are ideal habitat for the desert cottontails. Mountain brush and grassland meadows are frequented by the mountain cottontails. Cottontails provide enjoyable hunting recreation as well as diet for avian and mammalian predators (Table II-10).

Snowshoe hares were recently reclassified small game animals from their former non-game status. Hares mainly occupy montane coniferous forest, though distribution and density vary considerably by season and year.

Table II-10 Small Game Species,
Green River Basin, Wyoming

Small Game	: Relative : Importance	: Habitat : : Area	: 1974 : : Harvest	: Nonconsump- : tive Use
		<u>Acres</u>	<u>No.</u>	<u>Visitor Days</u>
Cottontail rabbits	Local	11,500,000	6,604	19,500
Snowshoe hares	Local	1,100,000	314	2,500
Red squirrels	Local	1,100,000	350	12,500

FIGURE 5

MULE DEER RANGE
GREEN RIVER BASIN
WYOMING

APRIL 1978

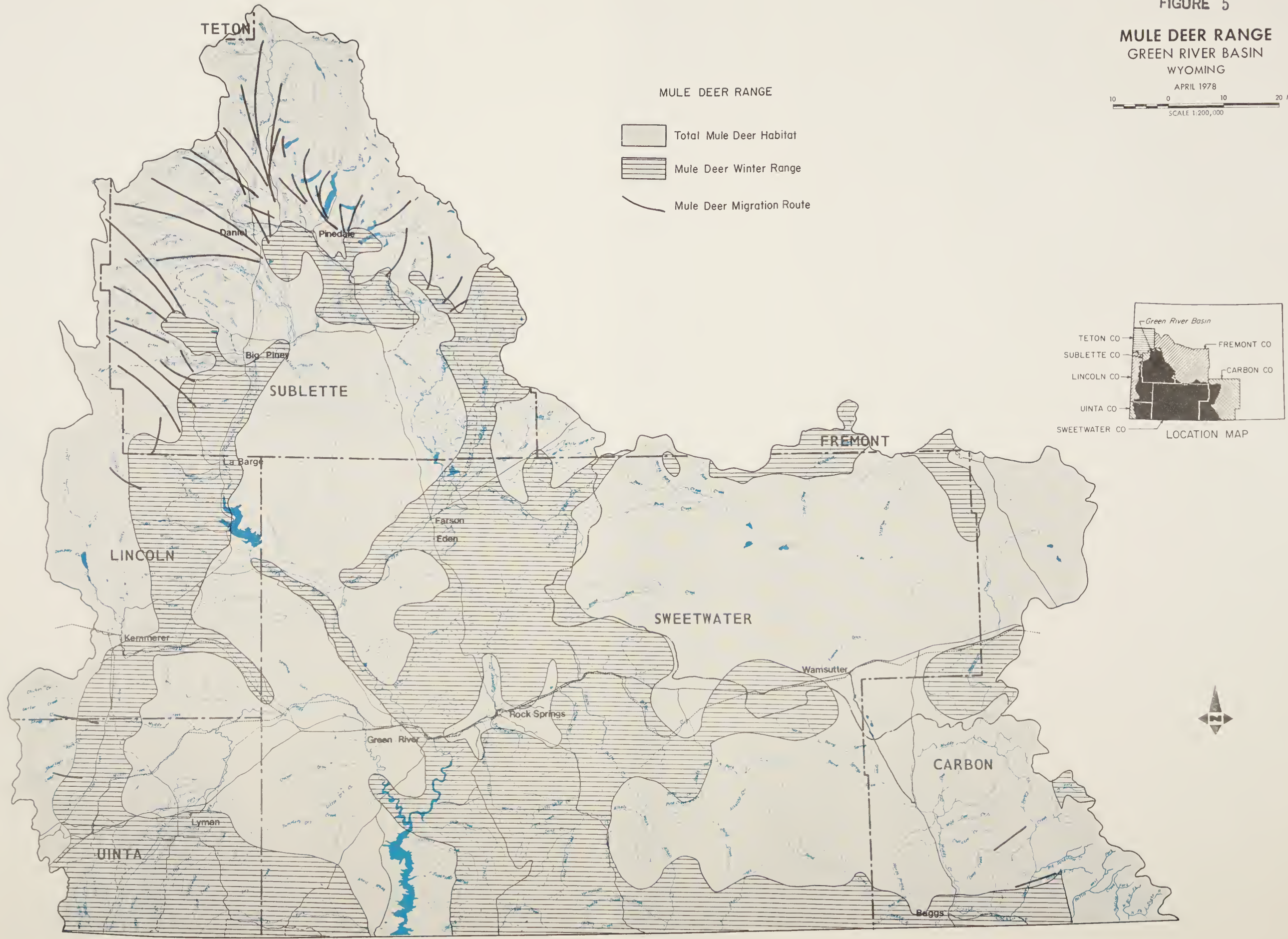
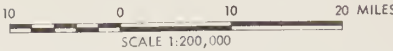


FIGURE 6

ELK RANGE
GREEN RIVER BASIN
WYOMING

APRIL 1978

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SCALE 1:200,000

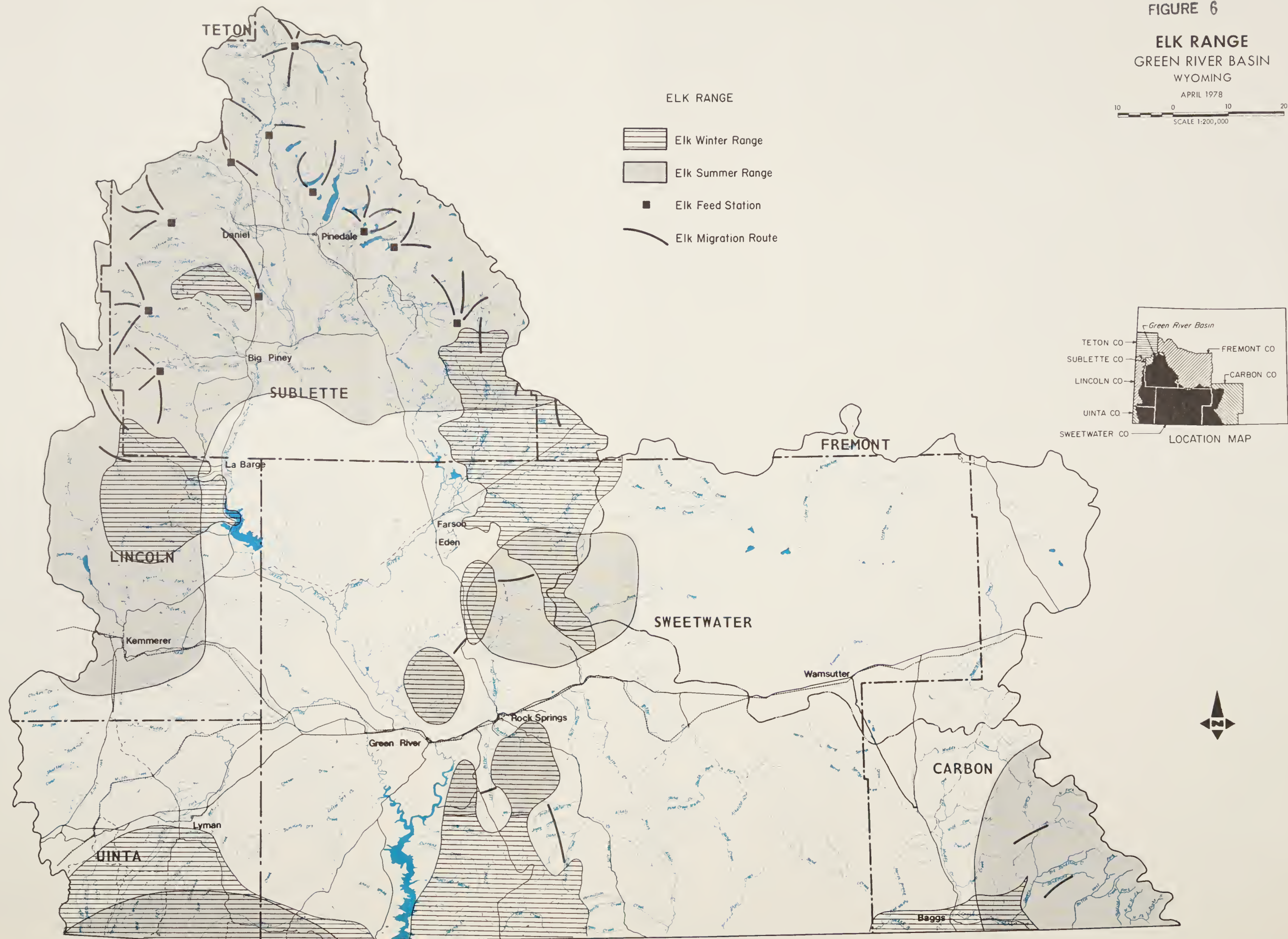






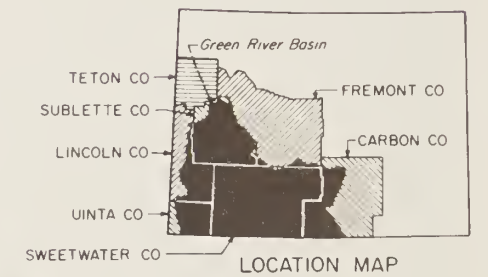
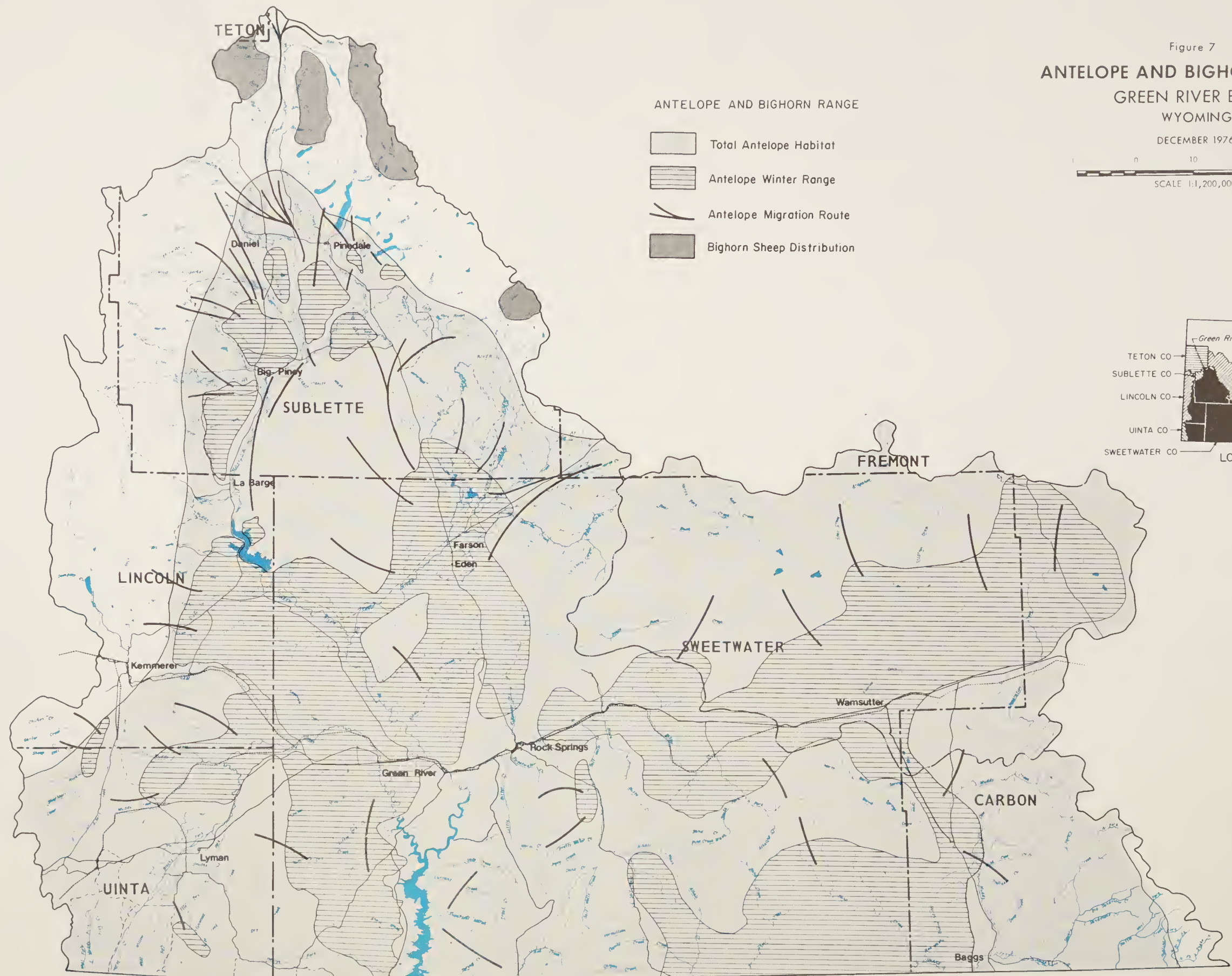
Figure 7
ANTELOPE AND BIGHORN RANGES
GREEN RIVER BASIN
WYOMING

DECEMBER 1976



ANTELOPE AND BIGHORN RANGE

-  Total Antelope Habitat
-  Antelope Winter Range
-  Antelope Migration Route
-  Bighorn Sheep Distribution



Source:
 Base map prepared by SCS, WTSC Corto Staff from Sublette Investigation MOP
 Team Cooperative River Basin Survey. Map, 1:500,000.
 Thematic detail from Wyoming Game and Fish Commission and U. S. Wildlife
 Service, 1976.

Cooperative River Basin Studies
 State Engineer, Wyoming Water Planning Program

FIGURE 8
MOOSE RANGE
GREEN RIVER BASIN
WYOMING

APRIL 1978
SCALE 1:200,000
10 0 10 20 MILES



Red squirrels were also recently classified from non-game status to small game animals under Wyoming law. Red squirrels are common residents of the montane coniferous forest. Squirrels provide some hunter recreation and a great deal of hiker and forest visitor enjoyment (Figures 9 and 10).

Furbearers. -- Furbearers include beaver, mink, muskrat, marten and badger. Beaver inhabit the entire Green River Basin in riparian settings. Their total range is limited to waterways and impoundments where adequate food supply, mainly aspen and willow are nearby. Beaver played an important role in the fur trapping era of the 1830's and 1840's. The Green River and its tributaries, especially in Uinta County, produced thousands of beaver pelts during this era. Currently, small-scale trapping is carried out by 20 or so trappers (Table II-11).

Mink inhabit riparian settings and watercourses. They are seldom seen but are highly prized by trappers and furriers. Muskrat occupy similar habitat. Their pelts are valued by trappers and furriers. Outdoorsmen and streamside visitors frequently see muskrat and their dens.

Marten inhabit forested regions of the basin's peripheral mountain ranges. Within the basin, marten occupy the same lands as the red squirrels and snowshoe hares. Marten are seldom seen by man though they are readily baited and trapped for pelts. Marten are rather uncommon throughout most of the continental United States. However, their population is quite high in the basin.

Table II-11 Furbearer Species
Green River Basin, Wyoming

Furbearers	Relative Importance	Habitat Area	Harvest (Trapping Ave. Per Year)	Nonconsumptive Use
		<u>Acres</u>	<u>No.</u>	<u>Visitor Days</u>
Beaver	: Local	1,300,000	28	30,000
Mink	: Local	1,300,000	22	Unestimated
Muskrat	: Local	551,000	345	18,500
Marten	: National	1,100,000	36	Unestimated
Badger	: Local		14	25,500

Badgers inhabit the entire basin in relatively open areas. Badgers are well known for digging holes in pastures, agricultural and rangelands. They are cursed for this habit and are hunted and trapped both as nuisances and furbearers.

Predators. -- The predatory or nonclassified group includes 12 species, all of local importance and quite common to the Rocky Mountain west. The species included are not individually described due to lesser importance and to conserve space. Included in this group are coyote, red fox, swift fox, bobcat, ringtail racoon, striped skunk, spotted skunk, long tail weasel, short tail weasel, white tail jack-rabbit and porcupine. Bobcats and coyotes are hunted and trapped for furs even though they are listed as predators. In the winter of 1976-77, large bobcat hides sold for \$350-\$400 and coyote hides for as much as \$80 (Table II-12).

Protected animals. -- Protected animals include the river otter, the lynx, the wolverine and the pika (Table II-13). The river otter range is diminishing in the western and southwestern United States, but its distribution in the basin appears to be increasing. Otters are more common in the Green River Basin than in many western and southwestern areas. Their rarity prompted the Wyoming State Legislature to provide protection for these animals under the law. Otters are well known for their aquatic agility and playful nature.

The lynx inhabit the montane forestland and especially west of Big Piney in the Wyoming Range. Lynx are nocturnal and seldom seen. Its range and habitat coincides with the snowshoe hare in Lincoln and Sublette Counties.

Wolverines, very limited in number, are protected by law and are the largest member of the weasel family. They frequent remote mountain areas. A few reliable sightings nearly every year are reported from the basin. The last sighting was reported in the Pinedale area in 1974.

Pika are widely distributed throughout the higher elevations of the mountain west, although their habitat area is limited. Rock slides and talus slopes in alpine areas are required. They are easily observed during their nesting activities. Their "haystacks" of grass and small twigs among the rocks are readily seen evidence of their

FIGURE 9

SMALL GAME SPECIES I




GREEN RIVER BASIN

WYOMING

APRIL 1978

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SCALE 1:200,000

SMALL GAME SPECIES I

-  Snowshoe Hare
-  Hungarian Partridge
-  Columbian Sharpshooting Grouse

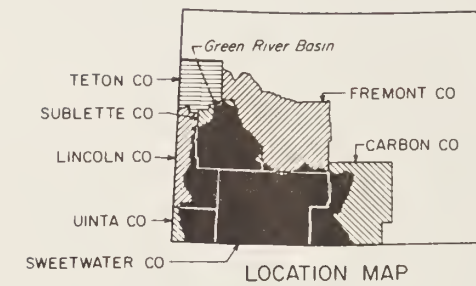


FIGURE 10

SMALL GAME SPECIES 2



GREEN RIVER BASIN

WYOMING

APRIL 1978

10 0 10 20 MILES
SCALE 1:200,000

SMALL GAME SPECIES 2

-  Chukar Partridge
-  Ruffed Grouse, Blue Grouse, and Red Squirrel

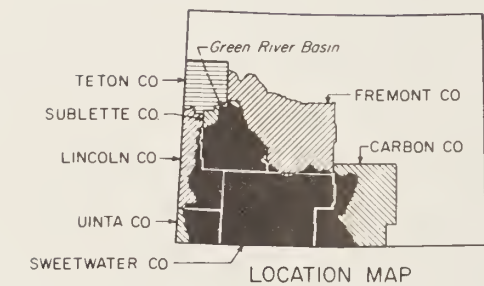


Table II-12 Predatory or Nonclassified Species,
Green River Basin, Wyoming

Predatory or Nonclassified Species	Relative Importance	Habitat Area	1974 Harvest (Trapper Per- mits Only)	Nonconsump- tive Use
		<u>Acres</u>	<u>No.</u>	<u>Visitor Days</u>
Coyote	Local	Entire basin	86	25,000
Red fox	Local	10,382,400	25	2,500
Swift fox	Local	10,015,200	Unknown	900
Bobcat	Local	Forested areas	39	25,000
Raccoon	Local	296,300	10	1,000
Ringtail	Local	One locality near Kemmerer (no estimate)	-	-
Striped skunk	Local	9,093,100	9	6,000
Spotted skunk	Local	2,305,300	-	6,000
Long tail weasel	Local	576,000	10	7,500
Short tail weasel	Local	346,240	-	7,500
Whitetail rabbit	Local	11,640,000	-	19,500
Porcupine	Local	2,231,600	-	6,000

habitation. Figure 11 shows the habitat for protected species.

Endangered mammals. -- The black-footed ferret is one of the rarest mammals in North America. It is officially listed as endangered in the Federal Register. Within the study area, there have been 19 valid ferret sightings and a dozen more that were classed as probable or possible since 1930. The relationship between ferrets, prairie dogs, and prairie dog towns has long been known. Prairie dog burrows provide shelter, den sites, and areas to raise offspring, and the inhabitants often provide the meals.

Table II-13 Protected Species
Green River Basin, Wyoming

Protected Species	Importance	Extent
		<u>Acres</u>
River otter	Statewide	Northern and west- ern basin rivers and streams
Lynx	National	750,000
Wolverines	National	500,000
Pika	Statewide	193,600
Black-footed ferret	National	8,000,000

Rodents and insectivorous mammals. -- Unclassified rodents include marmots, prairie dogs, squirrels, chipmunks, gophers, rats, mice and voles. Rodents are a very important group from the standpoint of food supply for carnivorous mammals, reptiles and birds. Subterranean activities of gophers, prairie dogs and voles are beneficial to the soil and aid in aeration and mixing. Rodents are unrated in importance and extent.




Free-roaming horses. -- The Green River Basin population of wild and free-roaming horses was estimated to be about 6,000 head in 1976. These horses currently occupy about 3,500,000 acres of high plains

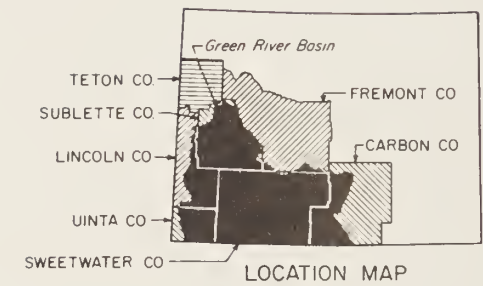
FIGURE 1 1

PROTECTED SPECIES
GREEN RIVER BASIN
WYOMING

APRIL 1978
10 0 10 20 MILES
SCALE 1:200,000

PROTECTED SPECIES

-  Lynx and Wolverine
-  Otter
-  Pika



desert range. Competition for forage among wild and free-roaming horses, domestic livestock and big game animals is of great concern.

Protection under the Wild Horses and Burro Act, P.L. 92-195, December 1971, is afforded these horses. Under protection of this Act, horses have increased from 1,200 head in 1971 to 6,000 head in 1976. The Bureau of Land Management, Rock Springs and Rawlins Districts, are currently seeking to reduce the herd to the 1971 level through roundup and the Adopt-A-Horse Program. Where adoption or placement is unsuccessful, the horses will be humanely destroyed.

Birds

Birds in the Green River Basin are grouped under seven subgroups: (1) migratory waterfowl; (2) migratory game birds; (3) upland game birds; (4) birds of prey; (5) protected birds; (6) non-game birds; and (7) endangered birds.

Migratory waterfowl. -- Migratory waterfowl include geese, ducks, swans and American coot. Three species of geese migrate through the basin. The white fronted, snow and Canada geese frequent waterways and impoundments throughout the basin. Canada geese are more commonly seen and are both migrants and residents of the basin. Canada geese nest on artificial structures placed along the Green River and its tributaries. White fronted and snow geese are uncommon residents, and migrate through only in the spring and fall (Figure 12).

Ducks are represented by 24 species in two major groups -- puddle ducks and diving ducks. Puddle ducks within the area include nine species, the more common of which are mallard, pintail, and varieties of teal. Diving ducks include 15 species, the more common of which are the redhead, canvasback, golden eye, and merganser. Ducks breed and nest on most waterways and impoundments throughout the basin (Table II-14).

Two species of swans inhabit the basin. The whistling swan is the more abundant while the trumpeter swan is a less frequent spring and fall visitor. Trumpeter swans have occasionally nested in the Upper Green River. Whistling swans nest more frequently near the basin wetlands.

American coot are common to waterways and impoundments. They are a gregarious, abundant species which may be hunted liberally. However, hunting pressure is usually light due to the nickname "mud hen" and poor diet appeal.

Table II-14 Migratory Waterfowl,
Green River Basin, Wyoming

Migratory Waterfowl	:	Relative Importance	:	Habitat Area	:	1973-74 Harvest
	:		:	<u>Acres</u>	:	<u>No.</u>
Geese	:	Local	:	750,000	:	165
Ducks	:	Local	:	3,190,000	:	6,226

Migratory game birds. -- Six species are included in this group -- mourning dove, common snipe, Virginia rail, sora, sandhills crane and bandtailed pigeon (Table II-15). The mourning dove is an important game bird in North America although it is classified as a songbird in many states. It is common to much of the Green River Basin during the spring and summer. Doves migrate south from basin lands in late August or early September. Both hunters and sightseers enjoy observing mourning doves.

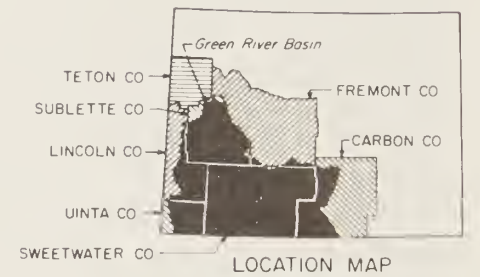
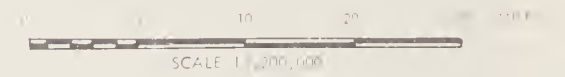
Common snipe or Wilson's snipe associate with wetlands, streams and irrigated lands throughout the basin. While on the game bird list, there is little hunting interest in them. Virginia rail is a seldom seen spring-summer fall resident of wetland and irrigated land habitat. They are protected from hunting within the Green River Basin. Sora are spring-summer-fall residents and are protected from hunting in the basin. They are little known to basin residents.

Sandhills cranes are frequent nesting residents and migrants. Their population in esatern Idaho and western Wyoming is building to the extent that some wildlife managers are suggesting hunting seasons in the future. Two conflicting issues are important to future sandhills crane management. First, nesting cranes are quite intolerant to disturbance. Heavy livestock use, agricultural activity and other development jeopardize their establishment and reproduction. Second, sandhills cranes depredate some crops. Grain crops in particular have been damaged by cranes in western Wyoming and eastern Idaho.

Bandtailed pigeons are possible residents of the basin though reliable sightings are not known. They are regular residents of Colorado and may make occasional flights into the basin, especially in the Little Snake River Valley.

Figure 12
WATERFOWL BREEDING AREAS
GREEN RIVER BASIN
WYOMING

DECEMBER 1976



- WATERFOWL BREEDING AREAS**
- Elevations Above 8500', Poor Breeding Habitat
 - Survey Areas, Size in Square Miles
 - Potential Waterfowl Breeding Developments
 - Prime Waterfowl Breeding Areas
 - Canvas Back Breeding Areas

Source:
 Base map prepared by SCS, WTSC Corta Staff from Sublette Investigation MOP
 Team Cooperative River Basin Survey. Map, 1:500,000.
 Thematic detail from Wyoming Game and Fish Commission and U. S. Wildlife
 Service, 1976.

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 State Engineer, Wyoming Water Planning Program

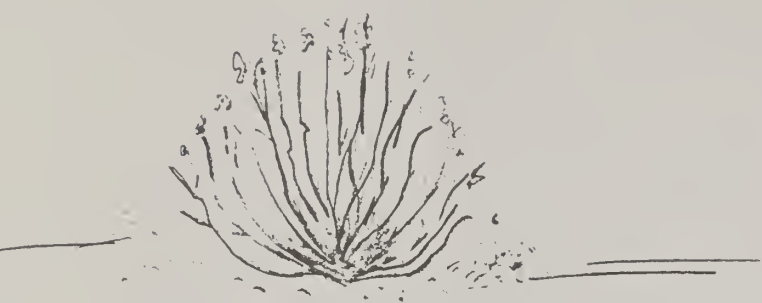
Upland game birds. -- Eight species of upland game birds are considered worthy of discussion (Table II-16). The species are sage grouse, ruffed grouse, blue grouse, sharptailed grouse, whitetailed ptarmigans, ringneck pheasant, chuckar partridge and gray partridge.

Sage grouse are common and widespread throughout sagebrush and low shrub high plains desert (Figure 13). Their winter range is smaller than other seasonal ranges and is a limiting population factor. Another significant limiting factor is "strutting grounds". These are breeding grounds in certain sagebrush vegetative types. Early morning visits to breeding grounds provide a fanciful mating display to thousands of visitors yearly. Sage grouse hunting in the basin is above par with other Wyoming areas and accounts for 60 percent of the Wyoming harvest. The importance of sage grouse in Wyoming and the Green River Basin cannot be overstated.

Table II-15 Migratory Game Bird Species,
Green River Basin, Wyoming

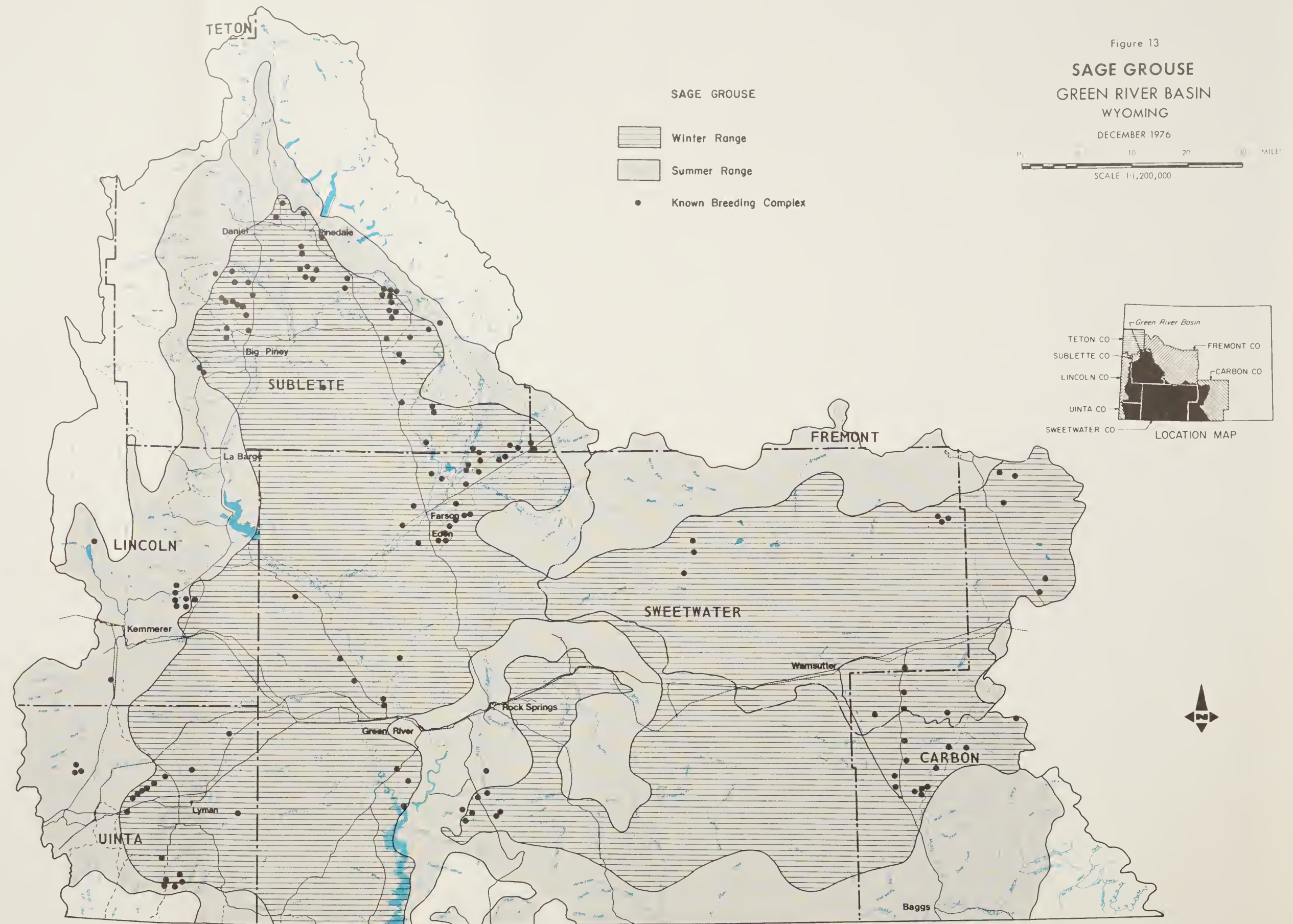
Migratory Game Birds	Relative Importance	Habitat Area	Harvest
		<u>Acres</u>	<u>No.</u>
Mourning dove	Local	11,500,000	1,272
Common snipe	Local	1,140,000	-
Virginia rail	Local	1,140,000	
Sandhills crane	National	1,140,000	-
Bandtailed pigeon	Not established		-

Ruffed grouse inhabit forested foothills and mountain valleys. They frequent deciduous trees like aspen and willow in the wintertime. Ruffed grouse hunting is a high quality sport and is combined with blue grouse for a common season and bag limit. Blue grouse inhabit forested foothills and mountains similar to ruffed grouse. In the winter, blue grouse roost in conifer trees, particularly Douglas fir.



*Photo 10- Male sage grouse on strutting grounds.
Courtesy of Wyoming Game and Fish Commission*





Source:
Base map prepared by SCS, WTSC Carta Staff from Sublette Investigation MOP
Team Cooperative River Basin Survey, Map, 1:500,000.
Thematic detail from Wyoming Game and Fish Commission, 1976.
U. S. DEPARTMENT OF AGRICULTURE SOIL CONSERVATION SERVICE USDA-SCS-PORTLAND, OR, 1978

Cooperative River Basin Studies
State Engineer, Wyoming Water Planning Program

Thus, blue grouse are found at higher elevations in the winter months than ruffed grouse. Hunting quality and visual attraction are high for both blue and ruffed grouse.

Sharptailed grouse occupy mountain brush and foothill lands only in the Little Snake River drainage. These birds are the Columbian sharptail which are the rarest species. They are shown on Wyoming's rare and endangered wildlife list as status unknown. Recent sightings have been made. This species is protected from hunting by law.

Whitetailed ptarmigan are an alpine and wilderness resident. No population estimates were made. Their range is the alpine ridges and slopes of the Wind River Range. There is no hunting season for ptarmigan.

Ringnecked pheasants are restricted to a small area of agricultural and peripheral lands in Eden Valley. Harsh climatic conditions and modern agricultural practices limit their population and range.

Chukar occupy broken relic and foothill lands where very steep slopes, rocky outcrops, and adequate water occur. Available water is extremely important during the brooding season. However, persistent snow cover of only a few inches can decimate chukar populations during the brooding season.

Gray or Hungarian partridge occupy some foothill lands and low rolling slopes. Populations are not high. Hunting pressure and visual attraction are thus low.

Birds of prey. -- This group includes eagles, hawks, falcons, vultures and owls. Basin lands are inhabited by two species of eagles, fourteen species of hawks, five species of falcons, ten species of owls and one species of vulture. All species inhabit intermountain state lands. All provide nonconsumptive recreation as visual attractions though no estimates of use are made. Illegal poaching of birds of prey occurs too frequently on basin lands (See Appendix 5).

Protected Water, Wading and Shore Birds. -- This group is exclusive of migratory waterfowl and migratory game birds. Their habitats include open water, marsh and flooded woodlands. Twelve families and 46 species are represented. Birds are not listed in this section due to local importance only and the need for brevity (See Appendix 6).

Nongame birds. -- A large and diverse variety of birds are in this group. Non-game birds fill very important functions as insect feeders

scavengers and food base for other animals. Appendix 7 provides a list of insectivorous and songbirds common to the basin.

Table II-16 Upland Game Bird Species
Green River Basin, Wyoming

Upland Game Birds	Relative : Importance	Habitat : Area	1973-74 : Harvest	Nonconsump- : tive Use
		<u>Acres</u>	<u>No.</u>	<u>Visitor Days</u>
Sage grouse	Interna- tional	11,290,000		25,000
Ruffed grouse	Local	1,810,000	389*	12,400*
Blue grouse	Local	1,950,000	507*	16,800
Sharptail grouse	State	380,000	0	0
Whitetailed ptarmigan	Local	200,000	0	0
Ringnecked pheasant	Local	40,000	0	300
Chukar	Local	1,140,000	396	9,000

Endangered birds. -- The American peregrine falcon is extremely rare in North America and is listed as endangered under the Endangered Species Act of 1973. Reliable reports of peregrine falcon sightings are received from the Green River Basin nearly every year. Recovery falcon eyries are being planned nationwide. Thus, suitable habitat is to be protected from encroachment wherever possible. The American peregrine falcon is considered of international importance. See Figure 14 for the habitat area of the peregrine falcon.

The whooping crane is officially listed as endangered. The present distribution of this species in Wyoming was obtained from recent sightings of a bird near Pinedale and the finding of a dead whooping crane near Lyman on May 29, 1977. These birds are probably the result of efforts to re-establish whooping cranes near Grey's Lake, in northern Idaho. The cranes can be expected in southwestern Wyoming, especially in conjunction with sandhill cranes migrating between Idaho and New Mexico.

ENDANGERED SPECIES

WYOMING GAME AND FISH COMMISSION 1976 U.S. FISH AND WILDLIFE SERVICE 1976

- BLACK-FOOTED FERRET [*Mustela nigripes*]
- KENDALL WARM SPRINGS DACE [*Rhinichthys osculus thermalis*]

PEREGRINE FALCON [*Falco peregrinus*] RANGES THROUGHOUT THE BASIN,
NESTING IN CLIFFS AT THE LOWEST ELEVATIONS

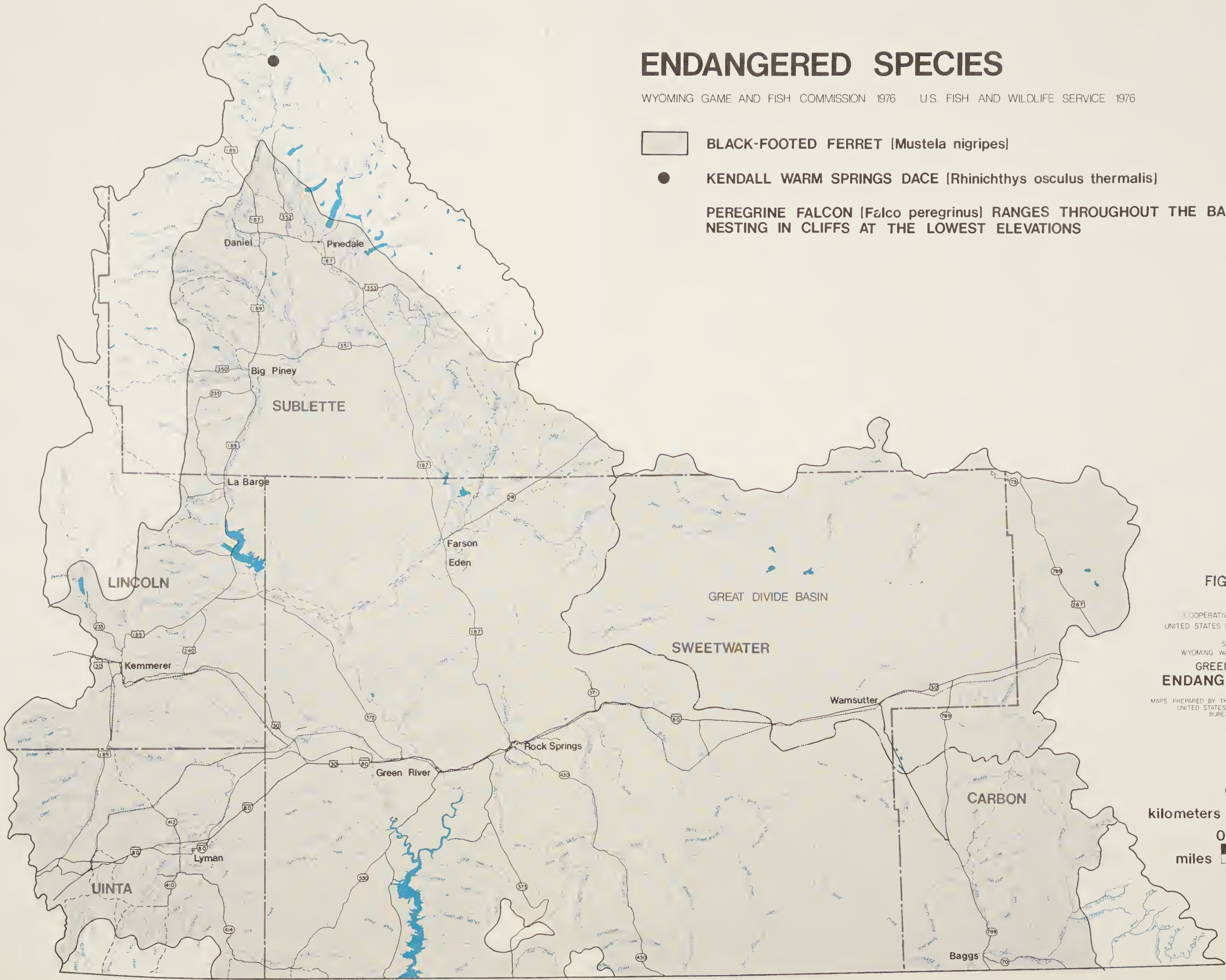
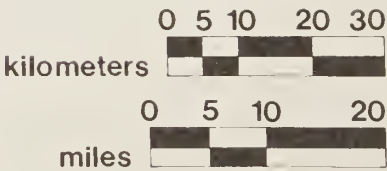


FIGURE 1 4

COOPERATIVE RIVER BASIN SURVEY
UNITED STATES DEPARTMENT OF AGRICULTURE
AND
STATE ENGINEER,
WYOMING WATER PLANNING PROGRAM
GREEN RIVER BASIN
ENDANGERED SPECIES

MAPS PREPARED BY THE SUBLETTE INVESTIGATION MAP TEAM
UNITED STATES DEPARTMENT OF THE INTERIOR
BUREAU OF RECLAMATION



The majestic bald eagle is a rare sight in many sections of Wyoming, but observations of this resident near some of the large lakes and rivers in the Green River Basin are not uncommon. The bald eagle is a "permanent resident" and partially migratory.

Figure 14 does not give the general habitat of either the whooping crane or the bald eagle. At the time the map was prepared, it was not known that the whooping crane visited the basin. Since the bald eagle was only placed on the endangered species list in 1978, information concerning its habitat area in the basin was also too late for inclusion.

Reptiles and Amphibians

Reptiles. -- This group includes lizards, snakes and turtles. Reptiles serve the food chain role of controlling insects and rodents. There are five species of lizards and six species of snakes that inhabit the basin. No turtles are known to inhabit the area (See Appendix 8 for listing and abundance).

Amphibians. -- Amphibians are the lowest class of animal presented in this report. Included are salamanders, toads and frogs. It is believed that there are four species of frogs, two species of toads and one salamander species in the basin (See Appendix 8 for listing and abundance).

Paleontological Resources

The Green River Basin is rich in fossil resources due to extended sediment deposition. Long geologic history and numerous processes have contributed to the fossil richness of the Green River Basin. Mountain building and the retreat of shallow seas created thick marine and stream sediments. These sediments entombed numerous plants and animals.

Even though the first fossil vertebrates discovered were described in the middle nineteenth century, the Green River Basin is far from being explored paleontologically. Yet undescribed and undiscovered are many fossil deposits. However, to date some of the richest vertebrate fossil deposits in the world have been recorded. Known fossil-rich areas extend over an estimated 2,009,000 acres. Tracts are described

and mapped in paleontological literature as fossil-rich areas. Figure 15 shows the major paleo-archaeology areas in the basin.

Maps of fossil-rich localities should not be interpreted as depicting fossil-bearing areas versus nonfossil-bearing areas. Fossil-rich areas are localities where significant collections have been made by scientific institutions. Fossil-rich areas are shown in Table II-17 by counties, numbers of acres, acreages and significance rating. The significance rating is a relative rating on a scale from 1 to 10 and applies only to the Green River Basin. Ten indicates the more significant fossil-bearing strata and one the least significant fossil-bearing strata. Thus, the basis for this rating is simply fossil-bearing strata significance.

Table II-17 Fossil-Rich Area Significance and Size
(Acres in Thousands)
Green River Basin, Wyoming

Rating :	County					: Basin
:	Lincoln	Sublette	Sweetwater	Uinta	Carbon	Total
10 :	-	-	-	-	-	-
9 :	3.1	-	577.3	393.6	3.1	977.1
8 :	-	22.4	739.8	-	32.4	794.6
7 :	-	99.7	-	-	-	99.7
6 :	11.2	-	9.4	-	3.7	24.3
5 :	-	-	40.0	-	-	40.0
4 :	3.1	3.2	-	-	-	6.3
3 :	-	-	24.9	-	-	24.9
2 :	-	3.1	38.6	-	-	41.7
1 :	-	-	-	-	-	-
Total :						2,009,000

Cultural Resources




Archeological Resources

Archeological discovery and data compilation are in their infancy in southwestern Wyoming (Figure 15). Recorded sites number about 800 thus far and are considered a small number. Site investigations have yielded artifacts and evidence of human occupations dating back 13,000 years.

PALEONTOLOGY & ARCHAEOLOGY

PALEONTOLOGICAL RESOURCES OF THE SUBLETTE INVESTIGATION AREA BY THOMAS M BOWN

ARCHAEOLOGICAL STATUS OF THE SUBLETTE INVESTIGATION AREA BY CHARLES M LOVE

-  ARCHAEOLOGICAL SITES
-  FOSSIL RICH AREA
-  RATING (10 = BEST)

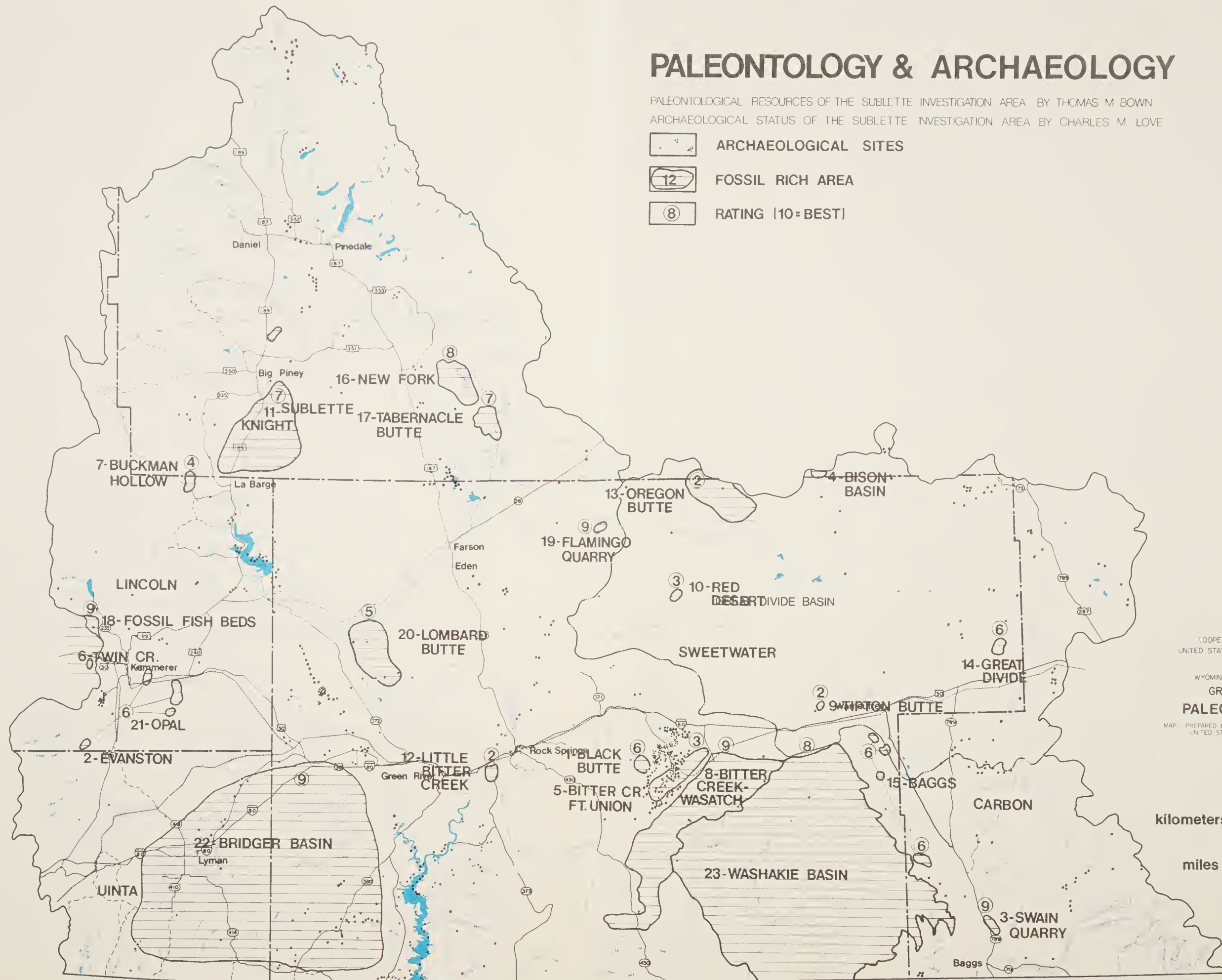


FIGURE 15

COOPERATIVE RIVER BASIN SURVEY
UNITED STATES DEPARTMENT OF AGRICULTURE
AND
STATE ENGINEER,
WYOMING WATER PLANNING PROGRAM
GREEN RIVER BASIN
PALEO-ARCHAEOLOGY
MAPS PREPARED BY THE SUBLETTE INVESTIGATION MOP TEAM
UNITED STATES DEPARTMENT OF THE INTERIOR
BUREAU OF RECLAMATION

Human occupancy of basin lands apparently became more widespread from about 2,000 years B.C. Artifacts discovered from this time are common enough to indicate a large increase in population.

Archeological site location is greatly influenced by topographic features, site type and economic variables. These factors reflect the influence of vegetation and climate on site location as well. Two site location groupings were assigned for discussion purposes: (1) the mountains; and (2) the basin floors. Groupings are based principally upon topographic factors. Only a very narrow zone of transition exists between the two groups.

Mountain environment sites. -- Nearby and peripheral mountain ranges constitute the mountain environment sites. The mountain ranges are the Uintas, Salt River, Wyoming, Wind River, and the Sierra Madre. Little archeological information concerning these ranges is verified and most is in sparse note form.

From available information, human activity took place in the summer and consisted mainly of big game procurement and quarrying for soapstone and occasionally for cherts. Food plant collecting was likely important, but little evidence has been found to support this assertion.

Wood fence lines, blinds and stone drive lanes were used as funneling mechanisms for big game procurement. It is assumed these structures and methods were used in the basin mountain ranges from evidence found in neighboring ranges. In addition high mountain passes in the basin may have been used to funnel game between large boulder blinds for procurement.

At a minimum, three soapstone quarries are known in the Wind River Mountains. Documentation of them is incomplete. Soapstone bowls, platters and straight and elbow pipes found on recorded sites were probably quarried from soapstone locations within the basin. Soapstone artifact quantities are small and mostly relate to cultures younger than 1,000 years. Bowl and platter artifacts have flat bases and likely relate to Shoshone cultures.

Most mountain sites recorded to date are in or near passes. For sites sampled, it appears possible to determine the direction from which prehistoric people came. This is discernible from distinct chert types found in various Wyoming basins. Few quality chert quarries

travel and sometimes exact quarry sites in other basins.

Late summer occupations of sites above 9,500 feet have been surmised. Early summer and late spring camping on fresh or corn snow may have taken place also. Cultures more recent than 1,000 B.C. have been dated at or near timberline.

Repeated intermontane travel has been substantiated between the basin and Jackson Hole. Parties traveling from or to the basin from Jackson can be readily discerned by the differences in lithic materials. Of course, some sites were occupied several times by groups traveling in opposite directions.

Basin floor environment sites. -- In the basin floor environs, more studies have been made because of extended seasonal access and industry-related surveys. The valley floors of the Green River, Great Divide and Washakie Basins have a significant number of recorded sites. Several site patterns related to recent geologic phenomena have been discovered.

Site patterns relate to the land features of sand dunes, riparian zones near springs and streams, playa lakes, breaks in topography and prehistoric vegetative patterns. Some recorded sites follow no pattern in regard to geologic feature, relief or present vegetative pattern.

Dune areas include many unrecorded finds. Little systematized work has been done on overall types and patterns here. Recorded sites in dune areas are mainly lithic scatters from various prehistoric periods. Sites are often accompanied by fire-cracked rock and occasional grinding stones and slabs. Bone fragments and tooth enamel are common.

The physical attraction dune areas had for prehistoric cultures is not understood. Many sites were winter camps, likely chosen because they provided suitable shelter material and some protection from the wind. In one recorded cluster, most camps are on the southwest and southeast edges of the dunes, thus indicating a shelter arrangement. A sand dune site southeast of Eden, Wyoming, has been identified as a probable dune bison trap and butchering area. This site, known as the Finley site, is the only documented animal sand trap in the basin, though more sites are suspected. The site has been excavated and has yielded long exquisitely chipped Eden projectile points of the paleo-Indian culture, some 7,000 to 9,000 years ago.

Sites along streams and near springs are as common as sand dune sites. Riparian site concentration and pattern were perhaps due to better game availability and access to water-related vegetation. Several categories of riparian sites are recognized. The most common riparian sites are general lithic scatters accompanied by fire-cracked rock. Rock chips in these areas are evidence of workshop activities. Stone circles are a second type of riparian site. Stone circles include pottery fragments and occasional stone hearths. These sites are more common near streams within drier basin areas. Petroglyph sites in the Flaming Gorge area are a third type though their location may not relate to the water. A fourth riparian type is animal kill sites. Several kill locations occur along basin streams. The Wardell Buffalo Trap adjacent to the Green River is the most significant. A similar site is recorded near Fontenelle Creek. Another suspected buffalo kill area located near the Green River is most interesting. It consists of an 800 foot line of stone piles and parallels a high terrace edge. The arrangement is similar to a plains buffalo jump. Any evidence of buffalo slaughtering and butchering has been washed away by a recent river meander.

Little site investigation near springs has been carried out. Only Pine Springs near Flaming Gorge has been studied in depth. Nearly all isolated springs were occupied by prehistoric camps during various time periods.

Playa lakes are another geomorphic feature that is archeologically important. The site pattern and analyses for one playa lake are nearly complete. Spot checks on several more have been made. Human activity appears significant in most of those locations. If patterns from initial analysis hold true, then most occupations date from 0 A.D. to recent historic contact with the heaviest occupations between 0 A.D. and 900 A.D.

Significant types include animal kill sites, stone structures, petroglyphs and pictographs, quarry sites and ceramic sites. The significance of each of the site types does not receive any additional elaboration here. Source reference (11) may be reviewed for more site type information.

Historic Sites and Trails

Numerous historical sites and many miles of historic trail are evidence of the basin's rich western history. Related archeological sites and findings are numerous also. Few of the latter sites are marked and developed for public use. Archeological sites represent Indian and ancient cultures dating back 13,000 years. Whereas historical sites and trails represent mainly the advent of the white man, the fur trapper period, the western migration, the early livestock period and the settlement and development.

Signs, markers and monuments identify and explain history and archeology at 127 listed sites and along portions of about 1,300 miles of historic trails and travel ways. The efforts of the Wyoming Recreation Commission and volunteer groups have developed many of these sites. To be commended are the Commission, county historical societies, business and civic organizations. Of special note is the Sublette County Historical Society and their efforts to research, identify and protect Oregon and Lander Trail segments and Mountain Men sites. Local and federal agencies have also been effective and progressive in the initial identification and marking of historic sites and trail segments.

The Wyoming Recreation Commission coordinates the overall preservation, protection and presentation activities. The task is large and underfunded. This is especially so in regard to providing adequate site protection and maintenance because sites are dispersed throughout the basin. Recreation Commission personnel and their contractors visit and clean remote, small sites less frequently on private and state lands. Figure 16 includes most but not all known sites and trails. One deletion is the Ferris-Hagerty site in the Sierra Madre.

Major historical sites, archeological sites and historic trails are enumerated in Table II-18. Table II-19 presents a list of historic trails by county and approximate miles. Appendix 9 is a descriptive list of historic sites by county.

Table II-18 Historic Buildings, Structures and Sites,
Green River Basin, Wyoming

County	Buildings or Structures	Sites	Buildings, Sites or Structures Registered
Carbon	2	2	1
Fremont		1	1
Lincoln	3	23	1
Sublette	5	16	4
Sweetwater	19	30	3
Uinta	14	12	4
Basin Totals	43	84	14

Basin Total - (all buildings, sites and structures), 127 of
which 14 are on the National Register of Historic Places.

Table II-19 Historic Trails (Approximate miles)
Green River Basin, Wyoming

Trails	Counties					Total
	Lincoln	Sublette	Sweetwater	Uinta	Carbon	
Astorian Route (Stuart Party)		122				122
Cherokee Trail			31		18	49
Dempsey Cutoff	29					29
Green River - South Pass Stage		9	67			76
Hams Fork Trail	42		5			47
Kinney Cr. Cutoff	17		30			47
Lander Cutoff	7	78				85
Mormon Emig. - Oregon Trail		17	82	41		140
Old Emigrant Trails (Various Trails)	30		72	48		150
Overland Trail			126	46	110	282
Point of Rocks - South Pass Stage		4	45			49
Sublette Cutoff						
(Oregon Trail Cutoff)	54	51	52	30		106
Other Trails	53		2			136
Total	232	281	512	165	128	1,318

HISTORIC SITES AND TRAILS

WYOMING STATE HISTORIC SOCIETY, 1976

SWEETWATER COUNTY HISTORIC SOCIETY, 1976



CHAPTER III

POTENTIALS

This chapter summarizes and discusses physically achievable potential for the environmental resource components. Economic and social constraints are not a consideration. Thus, the ultimate quantity and quality that may be physically achieved through management, investment and/or improvement are briefly summarized and displayed.

River and Stream Systems

Permanent and intermittent river and stream mileage is estimated at 6,240 miles. Riparian vegetation associated with this mileage is estimated at 182,200 acres or 1.3 percent of the basin area. An unestimated potential to improve management and protection of riparian lands exists. Revegetation, modified grazing and structural measures are part of these improvement measures.

Of the total mileage, 3,568 miles have been classified for esthetic qualities and availability for public use and zoning. Of the classified mileage, 1,086 miles have outstanding natural beauty and 2,391 miles are accessible and available to most of the public. The potential to protect and maintain esthetics and to maintain availability is greatest for those mileages which have the greatest natural beauty and accessibility.

Some degree of esthetic improvement could be achieved on 780 miles of degraded river and stream. Similarly, some degree of increased availability can be achieved along 1,118 miles of river and stream. An ultimate designation of the Upper Green River as a Wild and Scenic River is possible also.

Lakes, Reservoirs and Other Flat Water

Combined flat water acreage in the basin is 83,350 acres. The potential for management and protection is greatest on state and federal lands. Community and private flat waters serve mainly single uses such as culinary, industrial and irrigation. Multiple use potentials and opportunities exist mainly on 81,550 acres of state and federally managed flat water.

Natural Beauty

The broad natural beauty classification in this report is very subjective. But, classification points at the potential or opportunity to interpret, protect and maintain average and high visual quality lands. Twelve percent or 1,617,000 acres of the basin are average visual quality land (occasional trees on complex topography). Thirteen percent or 1,751,000 acres of the basin are high visual quality forested mountains.

Wilderness and Roadless Areas

Within the basin's National Forest lands, 383,300 acres are wilderness. These lands offer the best potential for continued and future management as wilderness. An additional 522,000 acres of roadless and undeveloped National Forest land and 128,000 acres of scenic, primitive National Resource land may have wilderness or primitive use potential.

The Forest Service is currently re-evaluating roadless areas under the Roadless Areas Review and Evaluation (RARE II) Program Areas. Planners with public participation are in the process of re-evaluating boundaries and areas. The process is scheduled for completion by late 1978.

The Bureau of Land Management is also systematically studying and recommending management direction for undeveloped and roadless area lands in their planning efforts.

Cultural Resources

Archeology

Archeological resources on the basin's mountain and floor environmental sites and specifically in the vicinity of six land features offer great potential as research and protection areas. Mountain environmental sites are not as productive because only seasonal, transitory human activity occurred. Both basin and mountain sites are still far from being surveyed or adequately investigated. The potential for archeological reconnaissance involves about .025 percent or 344,000 acres of Green River Basin land.

Paleontology

Fossil-rich areas have been identified on 2,009,000 acres of Green River Basin land. The potential for detailed investigation and scientific research within these areas has barely been tapped. The potential for fossil recovery exists even for areas outside designated fossil-rich areas. This may be particularly true in Eocene age rock units. Here again, investigation and research have barely scratched the surface.

Historical Sites and Trails

Numerous historical sites and many miles of historical trails portray the ancient Indian cultures, the fur trapper's era, the westward migration and the early settlement. One hundred twenty-seven historical sites and portions of 1,318 miles of historical trail and travelway are signed, marked and monumented. The potential lies in promoting historical appreciation through improved interpretation, maintenance, and administration of historic sites and trails.

Fish and Wildlife Habitat

The potential for improved management of fish and wildlife habitat within the basin is great. Human activities in previously undeveloped or seldom disturbed areas are encroaching on many important habitats. Achievement of the potential lies in a combination of reversing, halting and abating encroachment.

To illustrate the magnitude of important habitats, the nationally and internationally important species and their habitats are listed below. Improved public education, protection and management will benefit basin fish and wildlife habitat.

Fish

Four trout species -- cutthroat trout, German brown, lake trout (mackinaw) and California golden trout -- are rated nationally important within the basin. One species, Kendall Warm Springs dace, is classified endangered. A species of trout, Colorado River cutthroat trout is a

rare variety, and is of national importance.

The more important river and stream habitat is:

1. 166 miles of Class I blue ribbon trout water.
2. 193 miles of Class II very good trout water.
3. 1,102 miles of Class III important trout water.

Potential lies in maintenance of flows and habitat in these three classes.

An unestimated portion of 83,350 acres of flat water are important fisheries habitat also. This is especially true for lake trout and golden trout.

Wildlife

Within ten subgroups of wildlife are ten nationally and internationally important species:

<u>Species</u>	<u>Importance</u>	<u>Important Habitat Areas</u>
Elk	National	2,074,300 acres - winter range
Moose	International	1,696,300 acres - winter range
Bighorn sheep	National	7,000 acres
Grizzly bear	National	500,000 acres
Marten	National	1,100,000 acres
Lynx	National	750,000 acres
Wolverine	National	500,000 acres
Sandhills crane	National	1,140,000 acres
Sage grouse	International	11,290,000 acres

The chief potential for maintaining these species of wildlife is to prevent further encroachment upon their habitats.

Vegetation

Many potentials for improving management of native vegetation are present. From an overall environmental standpoint, retention or replacement of native vegetative types, composition and patterns are important. Appropriate blending or contrasting of developments such as roads and structures with the vegetative character is desired. This is especially desirable on 25 percent of the basin's lands rated average to high visual quality. Adjustment of grazing practices, timber harvest practices and various land treatments can enhance and maintain native vegetation pattern and composition.

Six possible endangered or threatened plants were identified as possibly growing in the basin. The potential is to seek the existence and extent of these species and to interpret and protect remnant populations from undue disturbance.

CHAPTER IV

PROBLEMS AND NEEDS

Public and agency concerns are stated as problems and needs in this chapter. Wyoming state agencies and federal agencies have identified current problems and needs through broad natural resource planning. This chapter provides lists and references for selected problems and needs. No attempt at priority setting of needs has been made. Whether or not these problems and needs are acted upon or implemented depends upon the concerned attention of basin residents, landowners and agency decision makers. Problems and needs derived from agency plans are referenced. Unreferenced items are the consensus of the Green River Basin Field Party from study and observation.

Rivers and Streams (Esthetics and Availability)

Problems

1. Degradation of streamside esthetics, availability and productivity by livestock concentrations, road construction and maintenance, homesite development, other land uses and stream channel alterations (1).
2. Low stream flows for uses such as canoeing, floating and fishing. Also, low streamflows impair fish and wildlife survival -- for example, trout and beaver (11).
3. Inadequate or complete lack of public access to some river and stream segments.
4. Indiscriminate selection and use of some river and stream segments for camping and picnicking. Denuded campsites, primitive roads, and damaged fish habitat are the result.
5. Littering and vandalism occur along some fishing streams.
6. Nutrient increases in certain lowland ponds and in the Lower Green River and other tributaries is causing an unsightly and undesirable growth of blue-green algae (13).

Needs

1. Stream protection, public education and regulations and enforcement.

2. Coordinated, regular patrol and cleanup of streamside use areas.
3. Rest and/or closure of some dispersed campsites and primitive roadways.

Lakes and Reservoirs (Esthetics and Availability)

Problems

1. Maintenance of natural settings around alpine lakes.
2. Eutrophication of inlet waters to Flaming Gorge Reservoir and certain lowland ponds.

Natural Beauty

Problems

1. Proliferation of transportation and utility system components without consideration of landscape pattern and appearance.
2. Unnecessary primitive road and trail development and scarring of landscape by motor vehicles.

Needs

1. Consolidated utility and transportation system corridors located within existing corridors insofar as possible (5) (15).
2. Rehabilitation of visual landscapes in some average and low average rated landscapes (19) (20).

Wilderness and Roadless Areas

Problems

1. Heavy human and livestock use at certain sites and along certain trails in the Jim Bridger Wilderness Area (4).
2. Nonconforming uses and activities have occurred in the wilderness. These include:
 - a. Facilities -- cabins, dams, etc.

- b. Pollution -- litter, detergents and human and livestock wastes.
 - c. Natural role of fire has been interrupted.
 - d. Excessive signing.
 - e. Some trail segments improperly located.
- 3. Lack of funds and manpower to complete management plans for wilderness areas.
- 4. Conflicts between permitted water development and wilderness or roadless area development.

Needs

- 1. Eliminate nonconforming uses from nine of eleven Bridger Wilderness Area Management Units (4).
- 2. Increase funds and manpower to improve management of wilderness and special areas.
- 3. Assess potential for primitive or natural area management of Adobe Town, Red Creek and Scab Creek areas (15).

Paleontological Resources

Problems

- 1. Insufficient reconnaissances of potential fossil recovery areas located outside known fossil-rich areas (22).

Needs

- 1. Continued detailed investigation of fossil-rich areas.
- 2. Protect and/or conceal valued recovery areas from vandals and amateur collectors.
- 3. Preserve and protect well-known paleontological areas such as:
 - a. Turtle shell beds between Green River and Kemmerer.
 - b. Agate beds, some near LaBarge.
 - c. Fossil beds in Washakie Basin and near Kemmerer.

Cultural Resources

Archeologic Resources

Problems

1. Basin floor and mountain archeological environment sites have not been fully explored, inventoried and protected (21).

Needs

1. Reconnaissance of suspected archeological recovery areas.
2. Protect and/or conceal certain areas from vandals and amateur collectors.
3. Provide special management and protection to well-known, often visited archeological recovery areas.

Historic Sites and Trails

Problems

1. Infrequent administration and maintenance at remote or less important historic sites.
2. Vandalism and littering.
3. Ground surface disturbance in the immediate vicinity of historic sites, signs, monuments and trail segments (16).
4. Protection of historic sites and trail segments while permitting other resource use and development (16).

Needs

1. Exclusion or modification of surface disturbance within vicinity of historic sites, signs, trails and monuments (15) (17).
2. Nominate Pine Springs, Black Butte, Sugarloaf and Cedar Canyon to the National Historic Sites Register.
3. Interpret, protect and preserve selected tie hack cabins, (14) (15).

4. Prevent grave markers, monuments and signs from becoming livestock rubbing places.
5. Improved and increased interpretation of historic sites and trails.

Fishery Resources

Problems

1. Aquatic and riparian habitat destruction and alteration diminishes the amount and quality of sport fishing (13).
2. Stream fishing opportunity in the Green River Basin is limited by habitat problems (13).
3. Habitat alteration and hybridization are jeopardizing populations of the rare Colorado River Cutthroat trout on a number of streams. This is particularly true on federal lands (12) (11).
4. Game fish loss in irrigation canals is high (11).
5. Silt movement from intermittent drainages into trout waters of the Lower Green River.
6. Maintenance of fisheries in the Green River below Fontenelle Dam.
7. Deterioration of fishery habitat through dewatering (11).
8. Peak flood flows that scour and erode stream channels to the detriment of fisheries.

Needs

1. Maintain at least 360 miles of Class I blue ribbon and Class II very important fishing streams(12).
2. Intensify stream access aquisition program (12).
3. Recommend alternative, preventative measures, compensation, and mitigation for all projects and practices which diminish the quality of aquatic habitats (12).
4. Identify, protect and enhance critical and limiting aquatic habitat such as spawning areas, food producing areas and an endangered species habitat for the Kendall Warm Springs dace.
5. Maintain beaver ponds for fishery habitat values where possible, and not in severe conflict with road maintenance, irrigation diversion and other major uses.

6. Access for fishermen could be improved to some lakes and reservoirs. County by county, more access could be developed for water surface acres as follows:

Lincoln County	Access needed to	1,820.7 acres water surface
Sublette Coutny	" " "	195.9 " " "
Uinta County	" " "	5.0 " " "
Carbon County	" " "	15.0 " " "
Total	" " "	2,036.6 " " "

Wildlife Resources

Problems

1. Lack of public recognition of the decline in wildlife habitat area and quality.
2. Extensive livestock fencing impedes antelope migration (12) (15).
3. Increased illegal kill of game animals associated with increased poaching (13).
4. Maintaining moose populations within limits of the willow habitat (12) (14).
5. Maintaining elk numbers consistent with winter range, calving areas, feeding programs, and crop depredation (22).
6. Depletion of desert ranges by excess wild horses (15).
7. Competition for forage and water among wild horses and various species of wildlife (12).
8. Lack of water on some ranges prevents distribution of antelope and sage grouse consistent with available forage (12) (15).
9. Some elk herds depend upon private land for winter range (12).
10. Over the snow vehicle activity in moose wintering areas (12) (5).
11. Maintenance of or enhancement of sagebrush stand composition and pattern in the vicinity of sage grouse breeding complexes (15).
12. Distribution and seasonal use areas of grouse not well known (13).
13. Decrease in duck and goose hunting areas available to the public (12).

14. Human activity within two miles of known and suspected sage grouse breeding complexes during April 1 to June 30 (15).
15. Unauthorized motor vehicle travel on off roads in raptor, peregrine falcon, and burrowing owl nesting areas during May 1 to June 30.
16. Water short upland game bird habitat (18).
17. Encroachment of human activity on blackfooted ferret habitat within the Utah prairie dog towns.

Needs

1. Identification, protection and enhancement of critical and limiting terrestrial wildlife habitat such as:
 - a. Winter ranges
 - b. Calving and fawning grounds
 - c. Nesting and strutting areas.
 - d. Roost trees
 - e. Wallows
 - f. Rutting areas
 - g. Rookeries
 - h. Eyries
 - i. Resting and brooding areas
 - j. Watering areas and wetlands
2. Minimum fencing for livestock control (12) (15).
3. Consider limited fencing of depleted riparian vegetation to benefit terrestrial and aquatic wildlife. Also modify grazing systems and emphasize rest from grazing for riparian zones.
4. Regulation of human activities that conflict with the elk calving season between May 15 and June 30 (5).
5. Prescribed burning to improve wildlife habitat quality (14).
6. Locate timber cutting areas away from elk calving grounds.
7. Allow oil and gas drilling only between June 30 and December 15 (18).
8. Allow oil and gas drilling only between June 30 and March 15 in sage grouse strutting areas.

9. Protect all crucial wildlife water sources from excessive use by livestock, wild horses and mineral and energy development activities (15) (17) (12).

Vegetation (Appearance, Composition and Pattern)

Problems

1. Retention or replacement of native vegetation types, composition and pattern where soil disturbing activities occur.
2. Heavy grazing and trampling of small wet meadows and riparian zones in the Great Divide Basin and other desert areas by livestock, wild horses and wildlife.
3. Location and management of endangered plant species.
4. Degradation of native vegetation along perennial streams.

Needs

1. Discontinue vegetative type conversions along waterways, particularly in aspen and willow types, and in high quality visual areas.
2. Restore native plant species where possible.
3. Implement and initiate grazing management systems consistent with the environment and resource productivity.

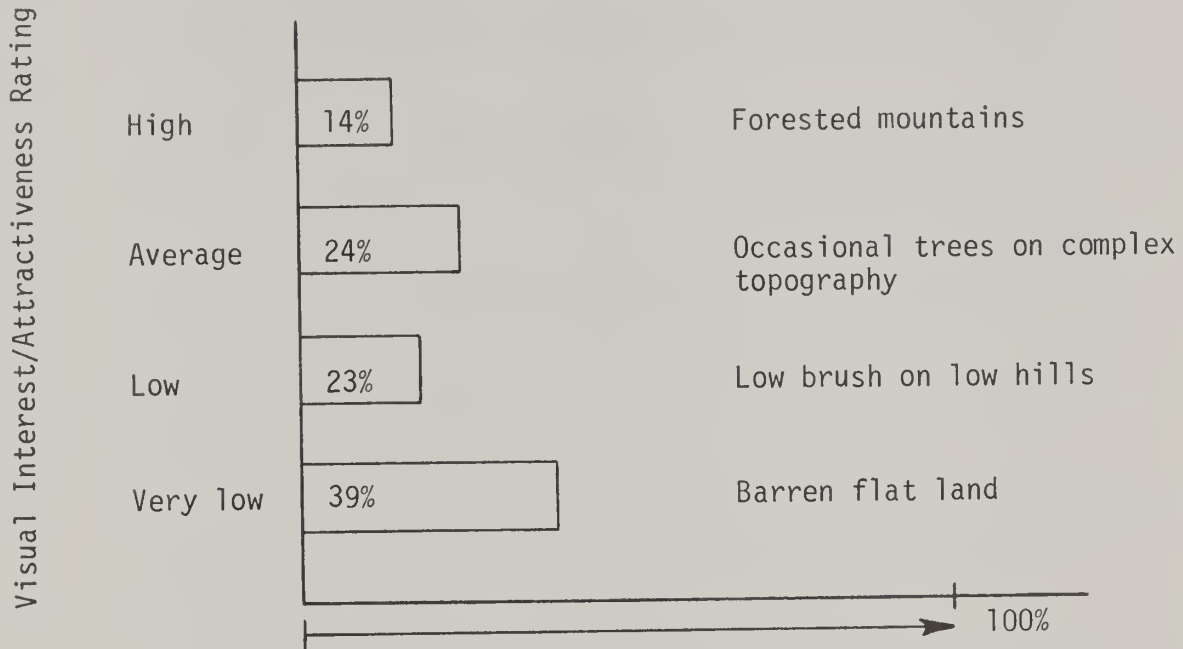
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- (5) U.S. Forest Service, Draft Environmental Statement and Proposed Land Use Plan, Union Pass Planning Unit, Bridger-Teton National Forest, January 1977.
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APPENDIX 1

Chart 1 Visual Interest/Attractiveness of Lands
(% of County Basin Area), Carbon County
Green River Basin, Wyoming



APPENDIX

1. Visual Resource Ratings by County
2. Stream Esthetics by County
3. Stream Availability by County
4. Minimum Stream Fishery Miles by fishery class by County
5. Raptors
6. Protected Water, Wading and Shore Birds
7. Insectivorous and Songbirds
8. Reptiles and Amphibians
9. Historic Sites and Discriptions by County

Chart 2 Visual Interest/Attractiveness of Lands
(% of County Basin Area), Lincoln County,
Green River Basin, Wyoming

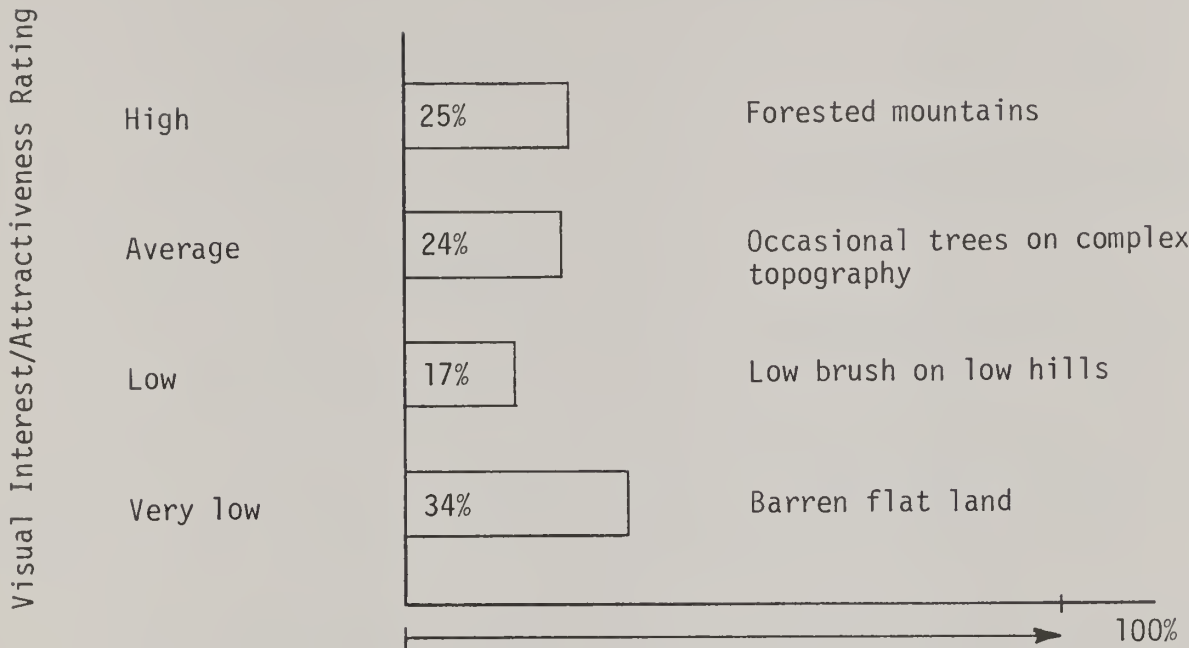
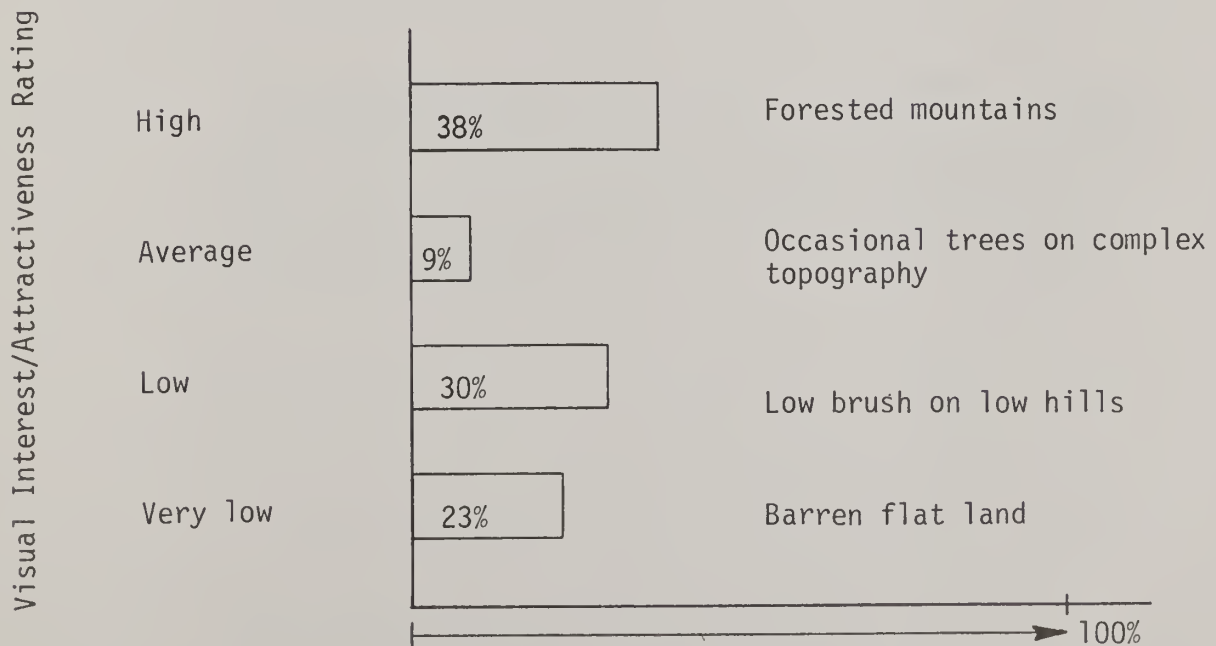


Chart 3 Visual Interest/Attractiveness of Lands
(% of County Basin Area), Sublette County,
Green River Basin, Wyoming



APPENDIX 1

Chart 4 Visual Interest/Attractiveness of Lands
(% of County Basin Area), Sweetwater County,
Green River Basin, Wyoming

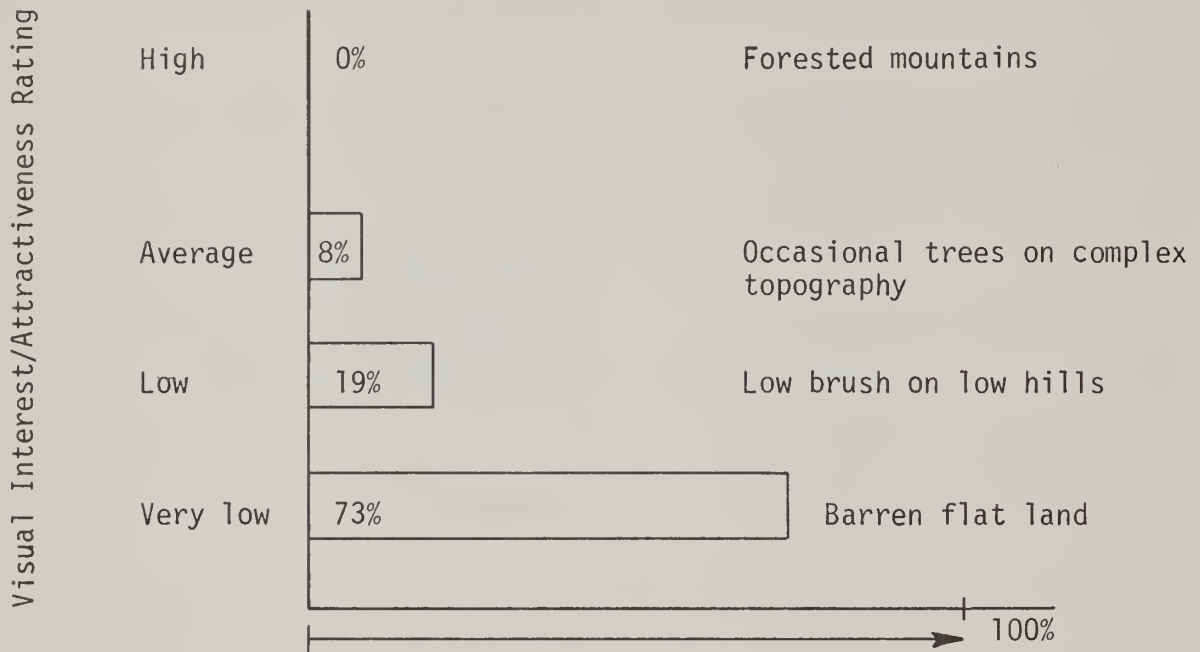
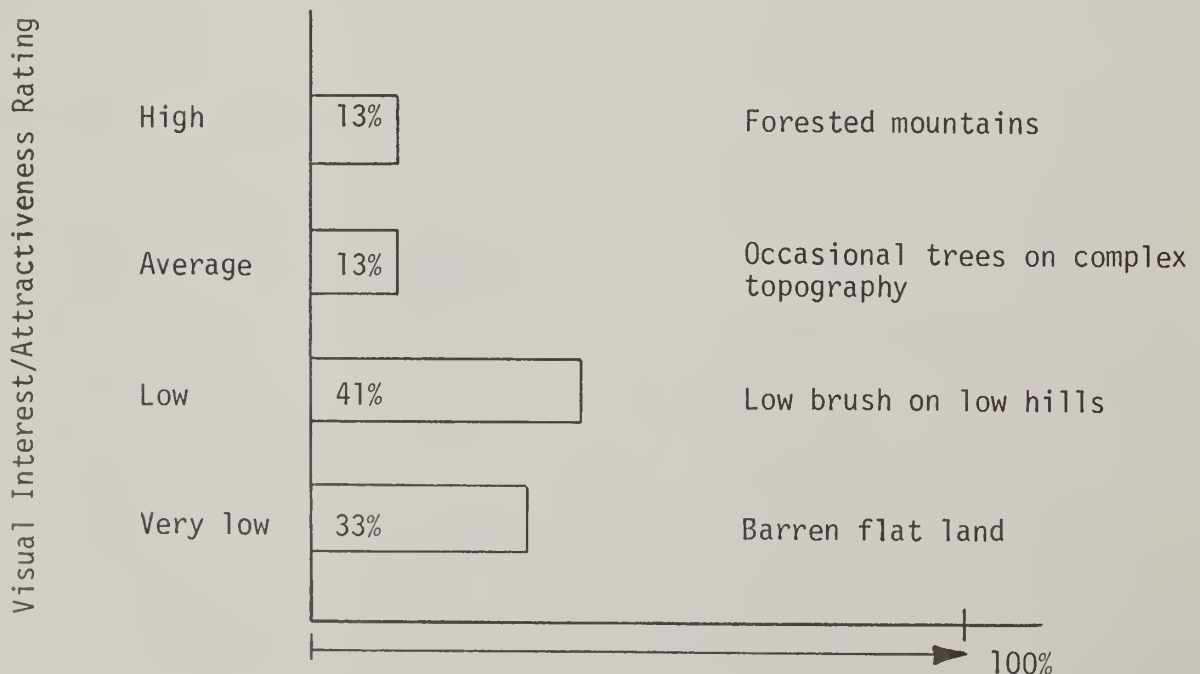
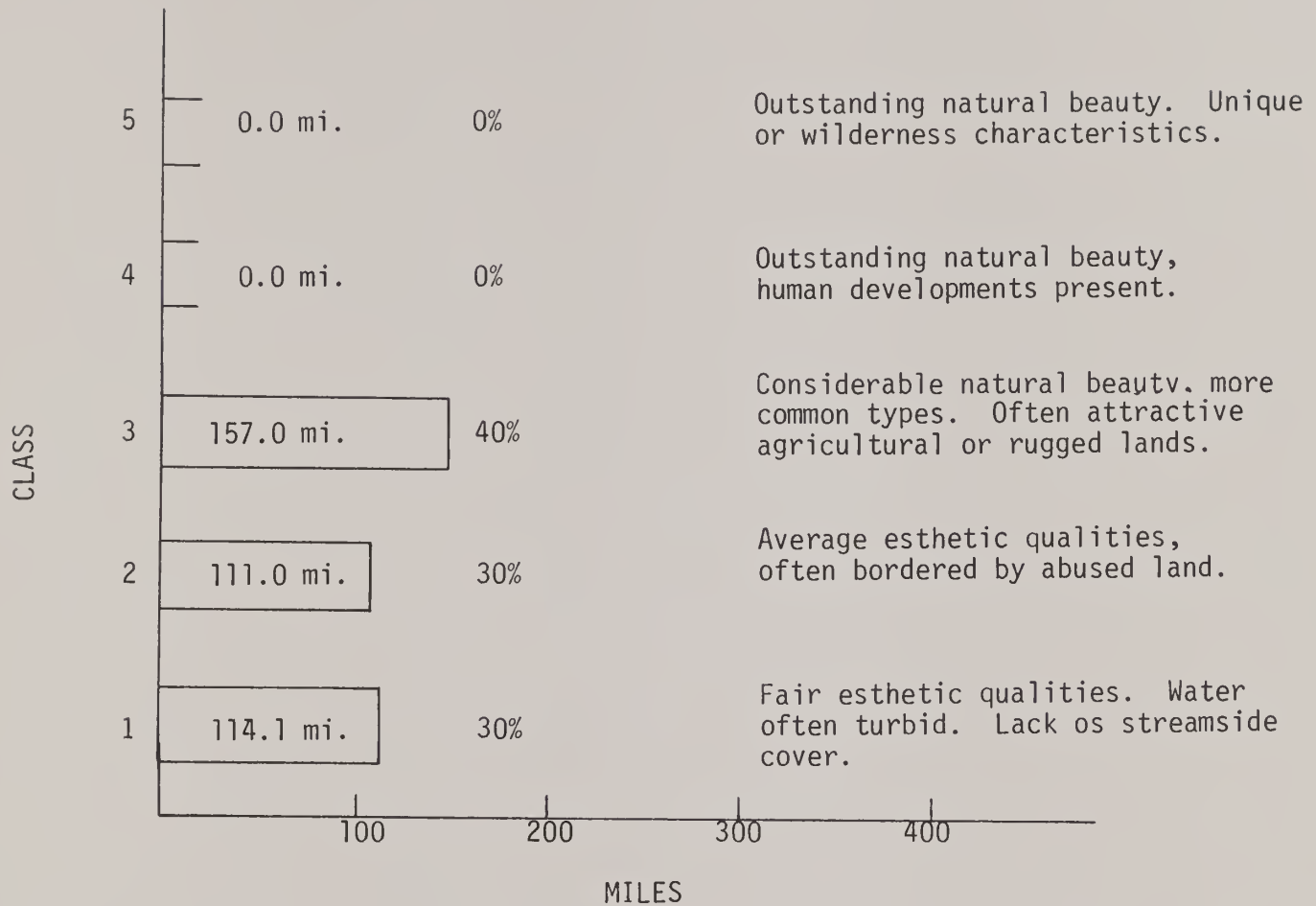


Chart 5 Visual Interest/Attractiveness of Lands
(% of County Basin Area), Uinta County,
Green River Basin, Wyoming



APPENDIX 1

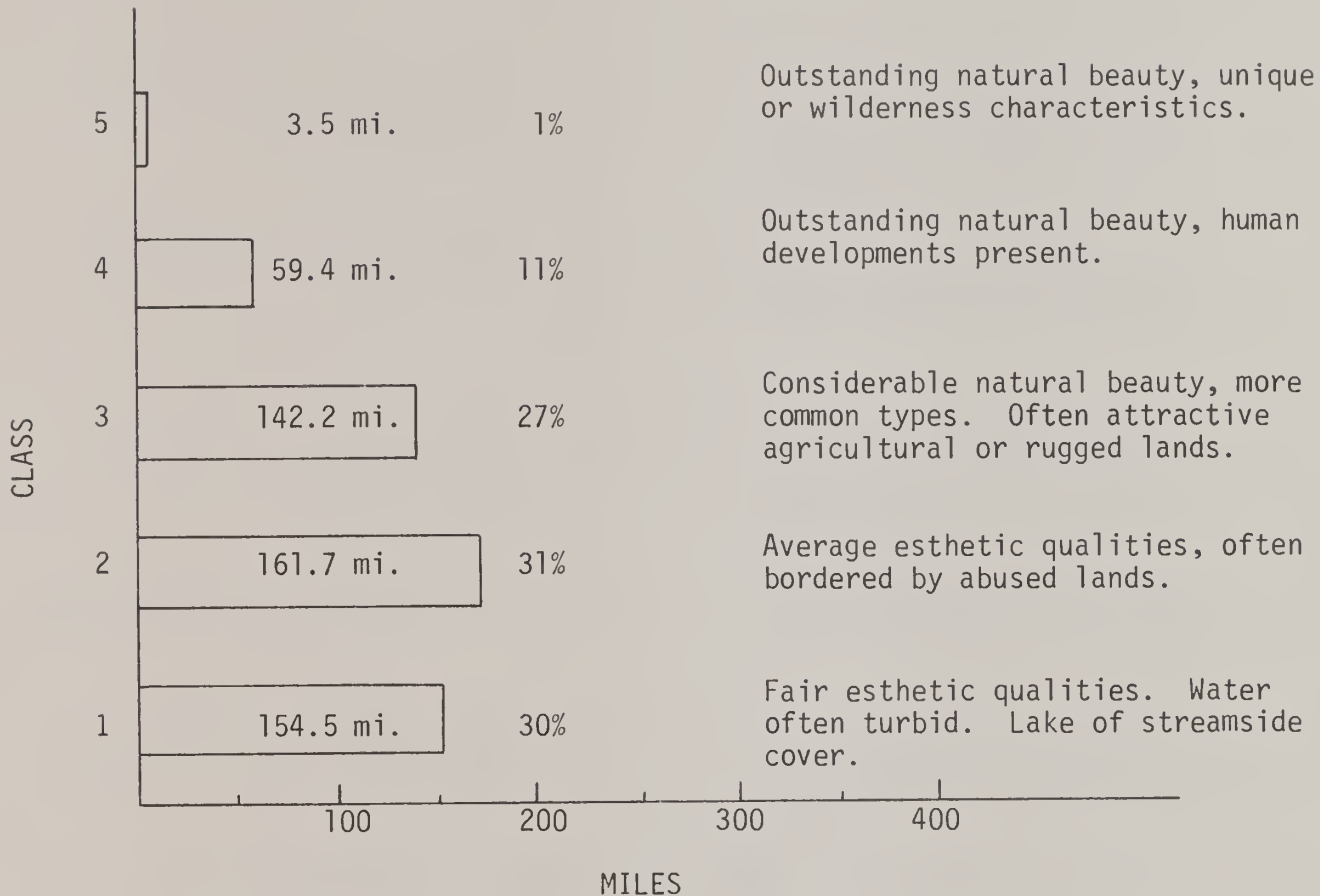
Chart 6 Stream Esthetics (miles and class)
Carbon County, Green River Basin, Wyoming



In Carbon County, 382.1 miles of stream and river were classified for esthetics and availability. None of these streams are considered as having outstanding natural beauty. Thirty percent or 114.1 miles have fair esthetic qualities and have been degraded by man's activities or natural occurrences.

APPENDIX 2

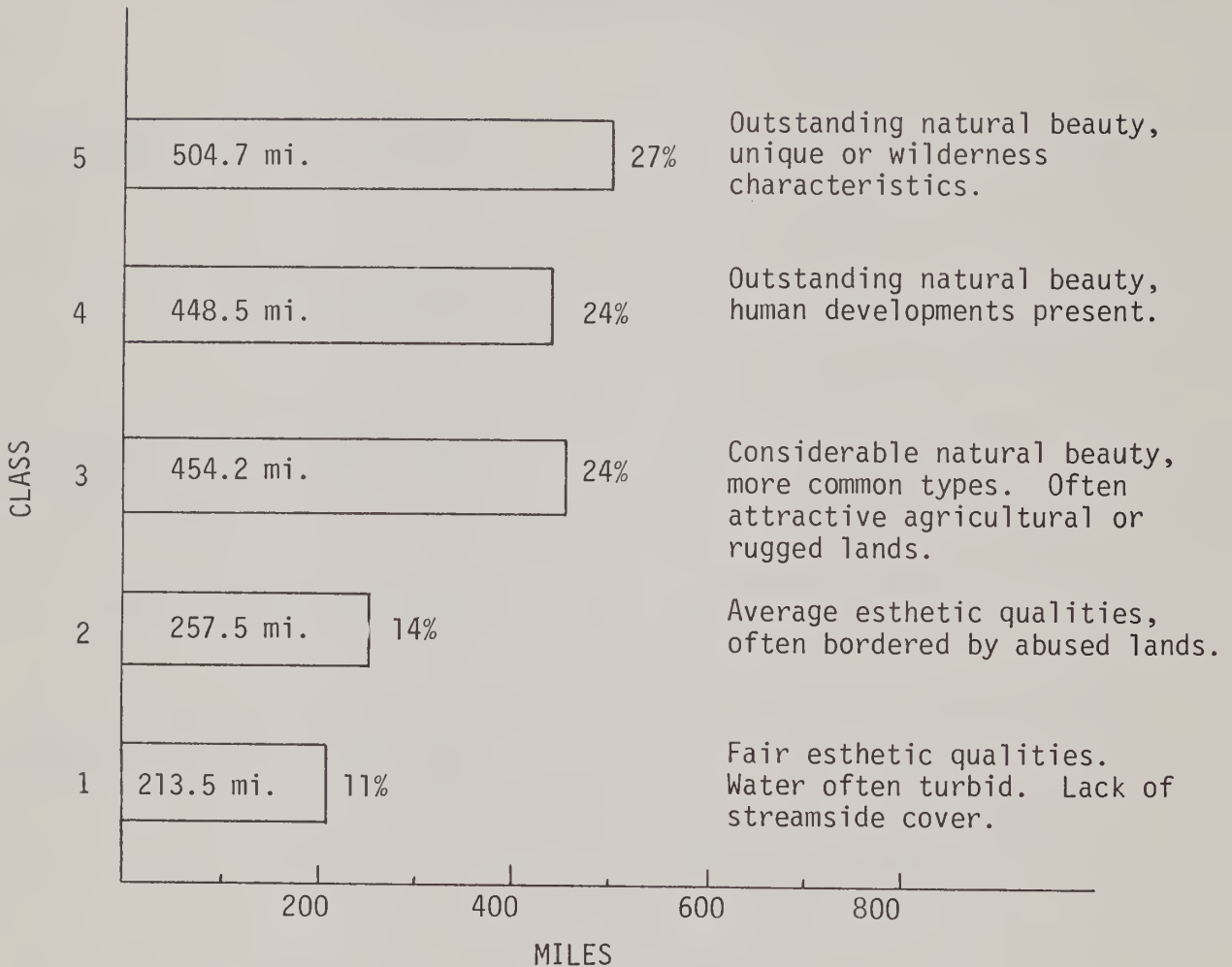
Chart 7 Stream Esthetics (miles and class)
Lincoln County, Green River Basin, Wyoming



In Lincoln County, 521.3 of the total 970 miles of drainage way were classified for esthetics. Twelve percent or 62.9 miles have outstanding natural beauty. Thirty percent or 154.4 miles have fair esthetic qualities and have been degraded by man's activities or by natural occurrences.

APPENDIX 2

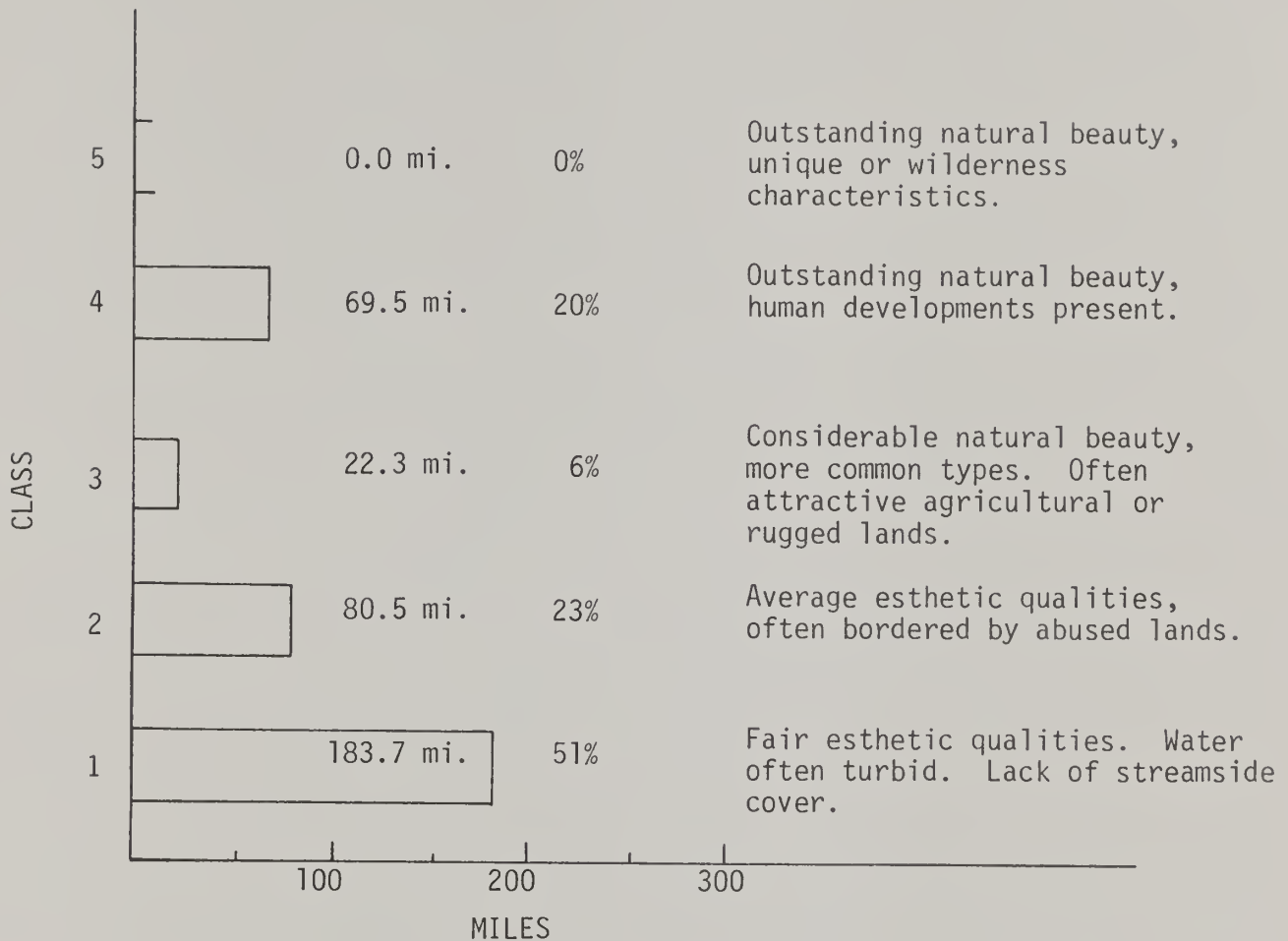
Chart 8 Stream Esthetics (miles and class)
Sublette County, Green River Basin, Wyoming



In Sublette County, 1,878.4 miles of stream and river were classified for esthetics and availability. Fifty-one percent or 953.2 miles have outstanding natural beauty. Eleven percent or 213.5 miles have fair esthetic qualities and have been degraded by man's activities or natural occurrences.

APPENDIX 2

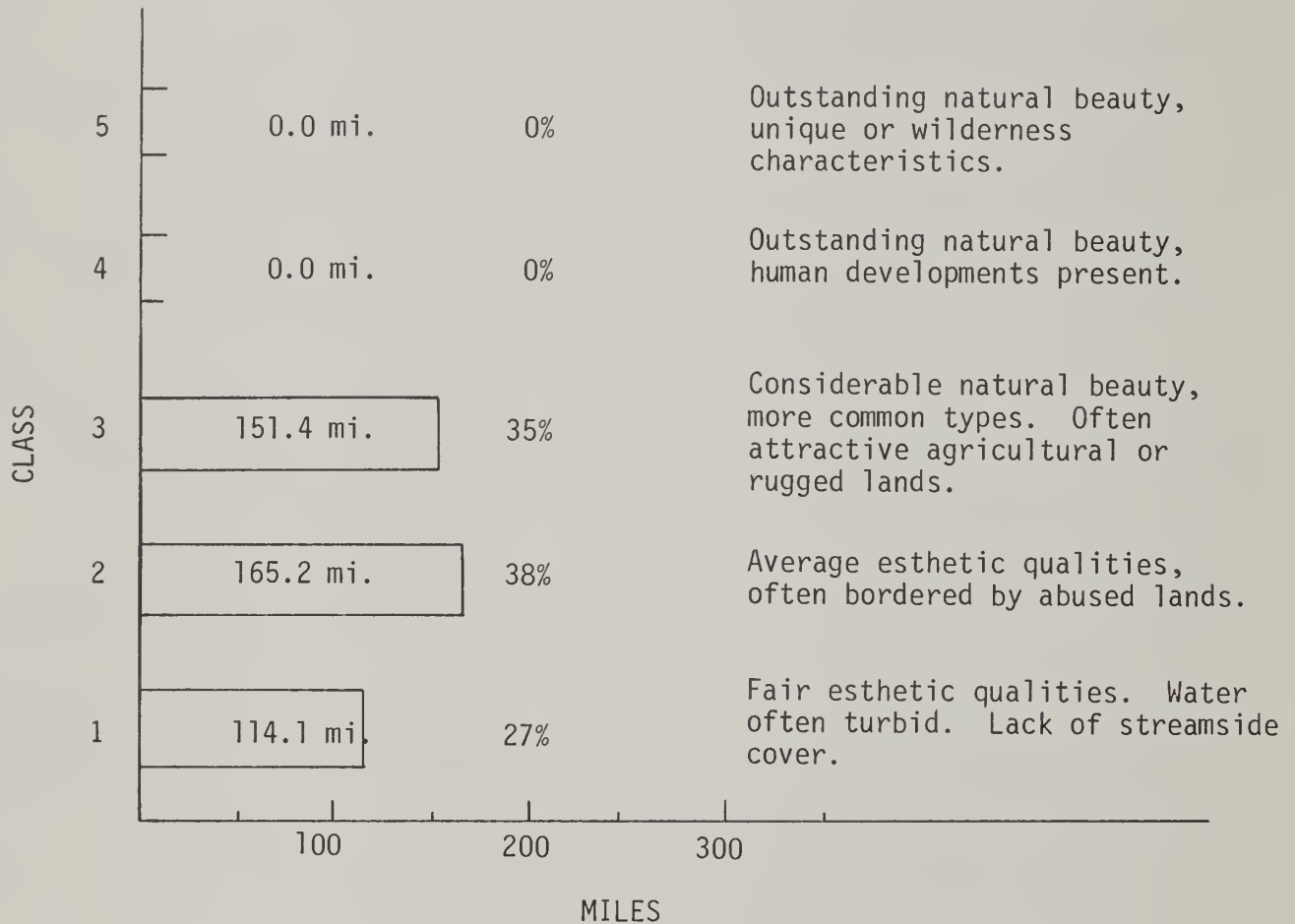
Chart 9 Stream Esthetics (miles and class)
Sweetwater County, Green River Basin, Wyoming



In Sweetwater County, 356 miles were classified for esthetics. Twenty percent or 69.5 miles have outstanding natural beauty. Fifty-two percent or 183.7 miles have been degraded by man's activities or natural occurrences.

APPENDIX 2

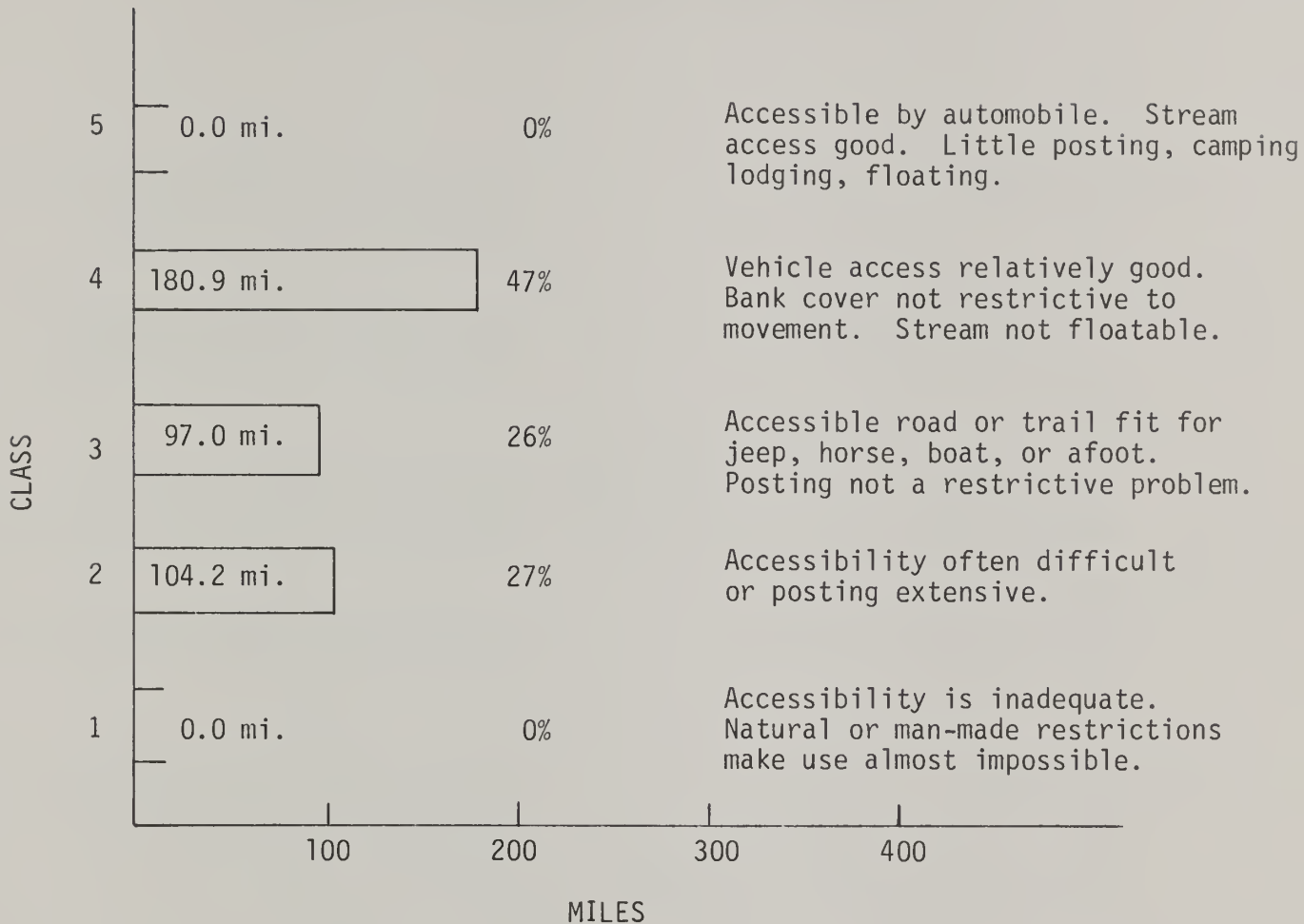
Chart 10 Stream Esthetics (miles and class)
 Uinta County, Green River Basin, Wyoming



In Uinta County, 430.7 miles of stream and river were classified for esthetics and availability. No stream or river mileage was classed as having outstanding natural beauty. Twenty-six percent or 114.1 miles were classed as having fair esthetic qualities and have been degraded by man's activities or natural occurrences.

APPENDIX 3

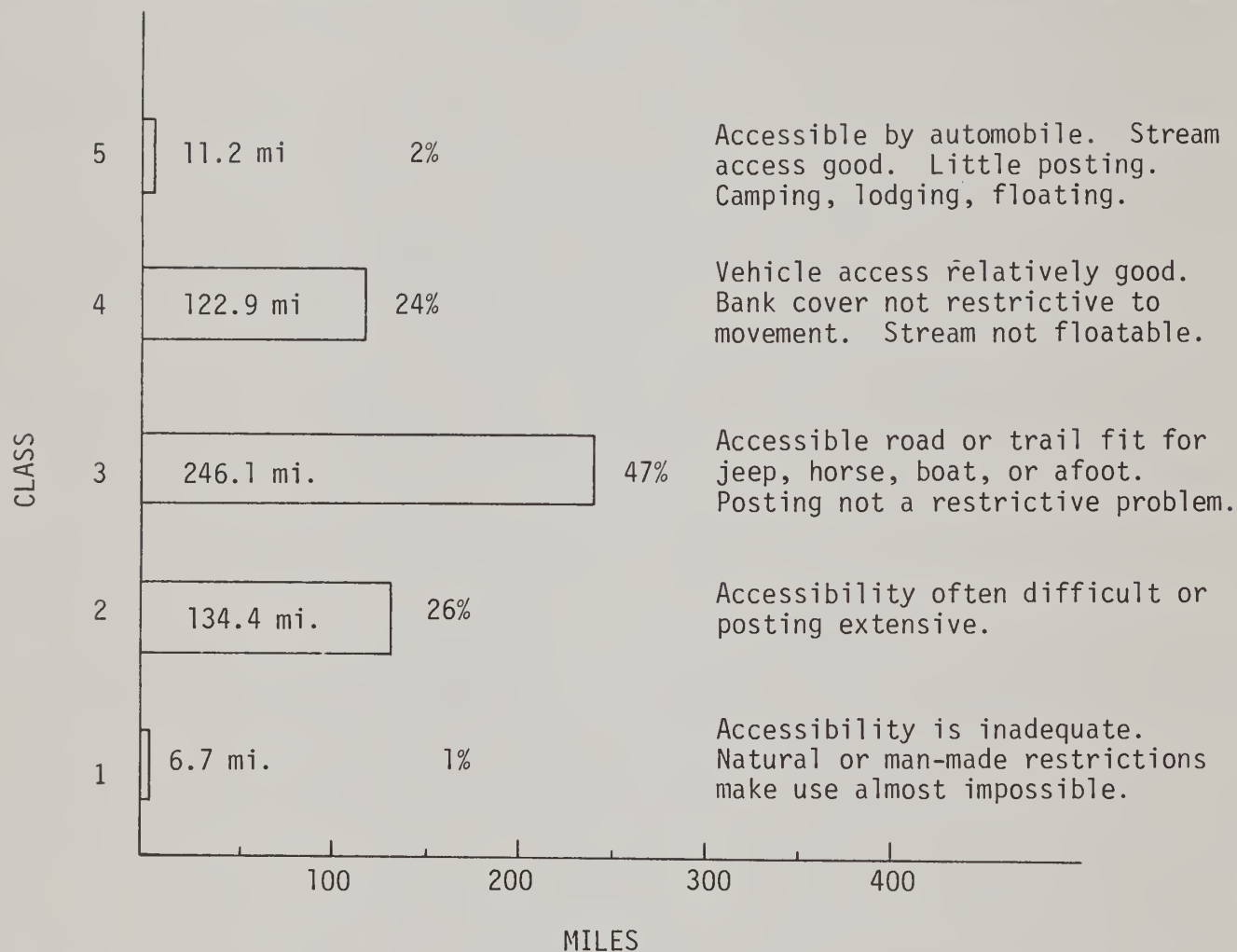
Chart 11 Stream Availability (miles and class)
Carbon County, Green River Basin, Wyoming



Streams and rivers are reasonably available for public use and viewing in Carbon County. Seventy-three percent or 277.9 miles are available and accessible to most of the public. Twenty-seven percent or 104.2 miles are less available or not available for public use and viewing.

APPENDIX 3

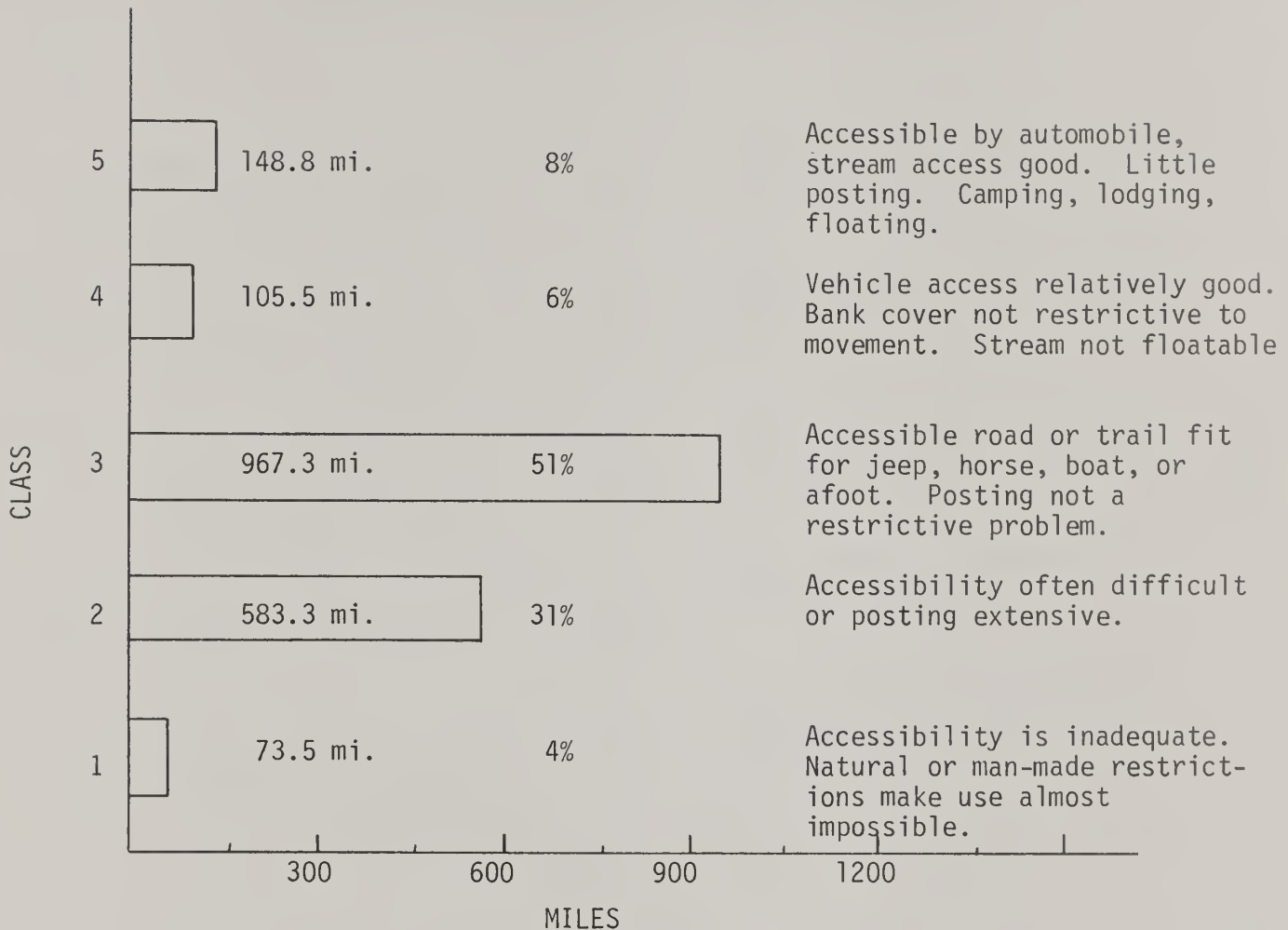
Chart 12 Stream Availability (miles and class)
Lincoln County, Green River Basin, Wyoming



Streams are quite available for public use and viewing in Lincoln County. Seventy-three percent or 380.2 miles are available and accessible to most of the public. Twenty-seven percent or 141.1 miles are less available or not available for public use and viewing.

APPENDIX 3

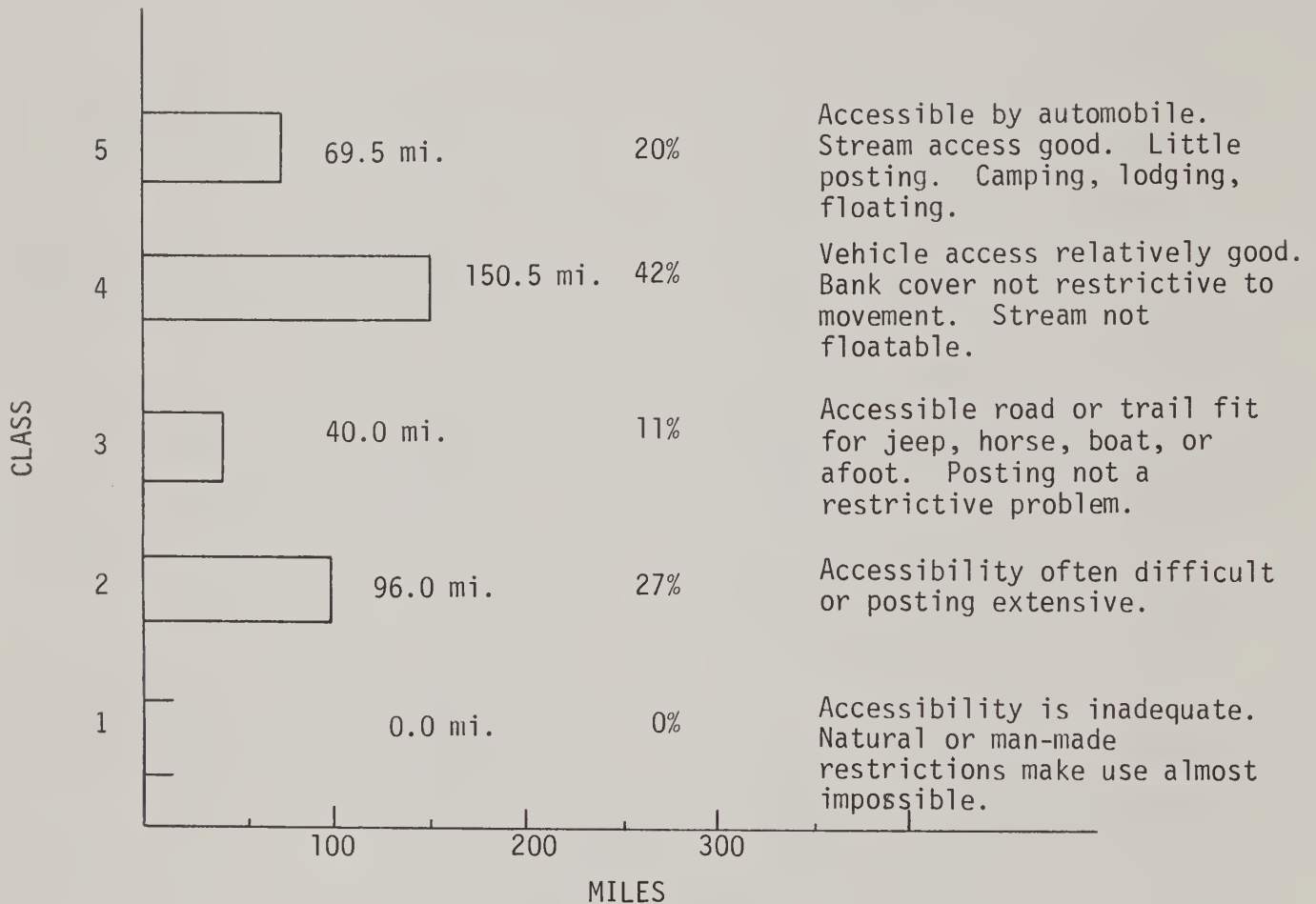
Chart 13 Stream Availability (miles and class)
Sublette County, Green River Basin, Wyoming



Streams and rivers are quite available for public use and viewing in Sublette County, though much stream mileage is in the Jim Bridger Wilderness Area and available to hikers and horsemen only. Sixty-five percent or 1,221.6 miles are available and accessible to the public. Four percent or 73.5 miles are less available or not available to the public.

APPENDIX 3

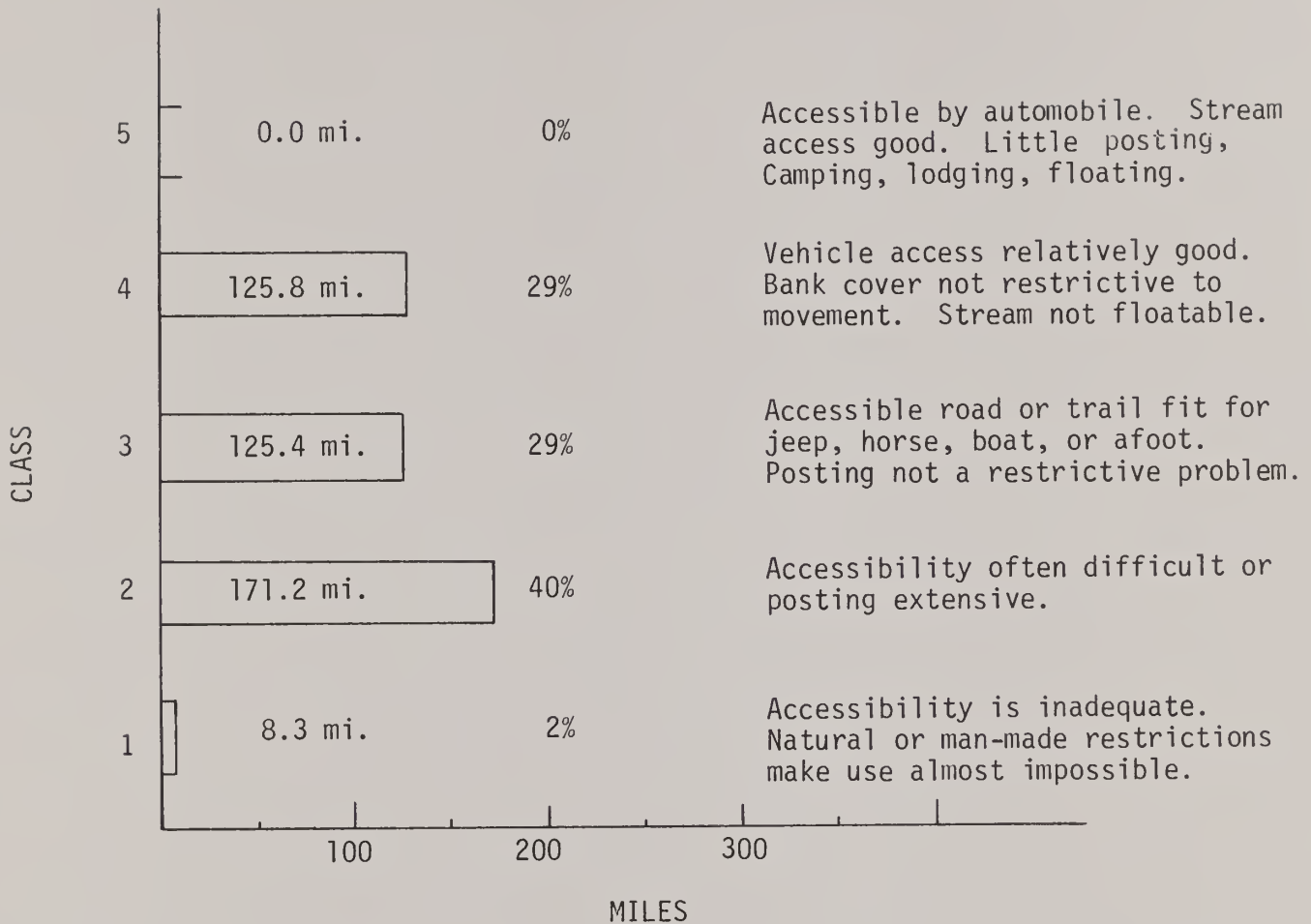
Chart 14 Stream Availability (miles and class)
Sweetwater County, Green River Basin, Wyoming



Streams and rivers are quite available for public use and viewing in Sweetwater County. Seventy-three percent or 260 miles are available and accessible to most of the public. Twenty-seven percent or 96 miles are less available for public use and viewing.

APPENDIX 3

Chart 15 Stream Availability (miles and class)
 Uinta County, Green River Basin, Wyoming



Streams and rivers are reasonably available for public use and viewing in Uinta County. Fifty-eight percent or 251.2 miles are available and accessible to most of the public. Forty-two percent or 179.5 miles are less available or not available for public use and viewing.

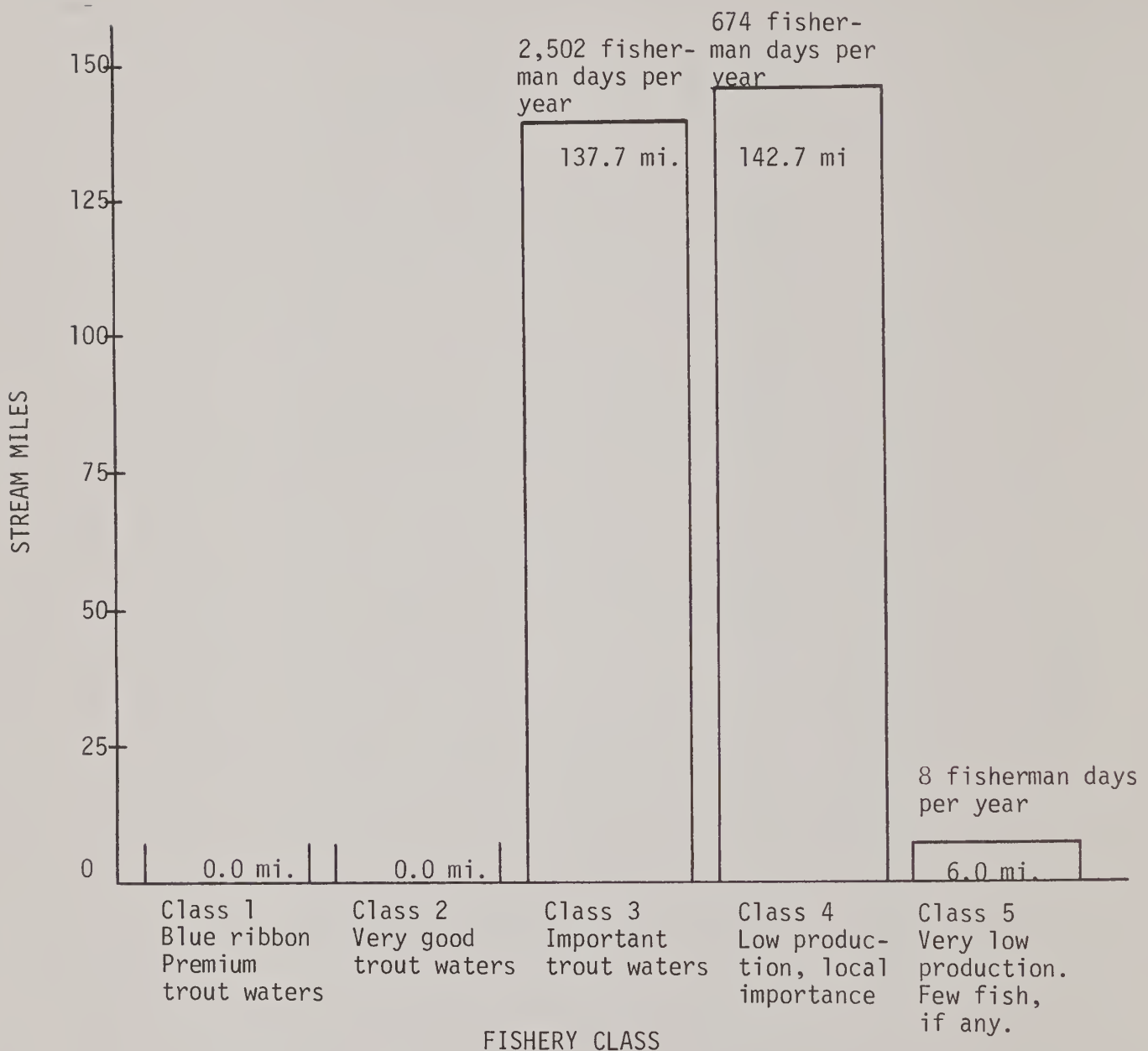
APPENDIX 4

Table 1 Minimum Stream Fishery Miles by Ownership
and Fishing Stream Classification (Carbon County)
Green River Basin, Wyoming

Fishery Classification	BLM	FS	State/ Local	Private	Other	Total
Blue ribbon	0.0	0.0	0.0	0.0	0.0	0.0
Red ribbon	0.0	0.0	0.0	0.0	0.0	0.0
Important	10.0	72.0	8.0	47.7	0.0	137.7
Low	23.0	72.0	2.0	45.7	0.0	142.7
Very low	0.0	6.0	0.0	0.0	0.0	6.0
Total miles	33.0	150.0	10.0	93.4	0.0	286.4
% Ownership	11.5	52.4	3.5	32.6	0.0	100.0

APPENDIX 4

Chart 16 Minimum stream fishery miles by fishery class and annual fisherman days use, Carbon County, Green River Basin, Wyoming



Of 137.7 miles of important trout waters, all fishery miles are generally small but can withstand heavy to moderate fishing pressure. Of 142.7 miles of low value, locally important trout waters, 138.7 miles are small and/or cannot withstand much fishing pressure. Four miles support few game fish, if any, and cannot support a long-term trout fishery. Of 6.0 miles of very low value trout waters, all mileage have few trout, if any and cannot support a long-term fishery.

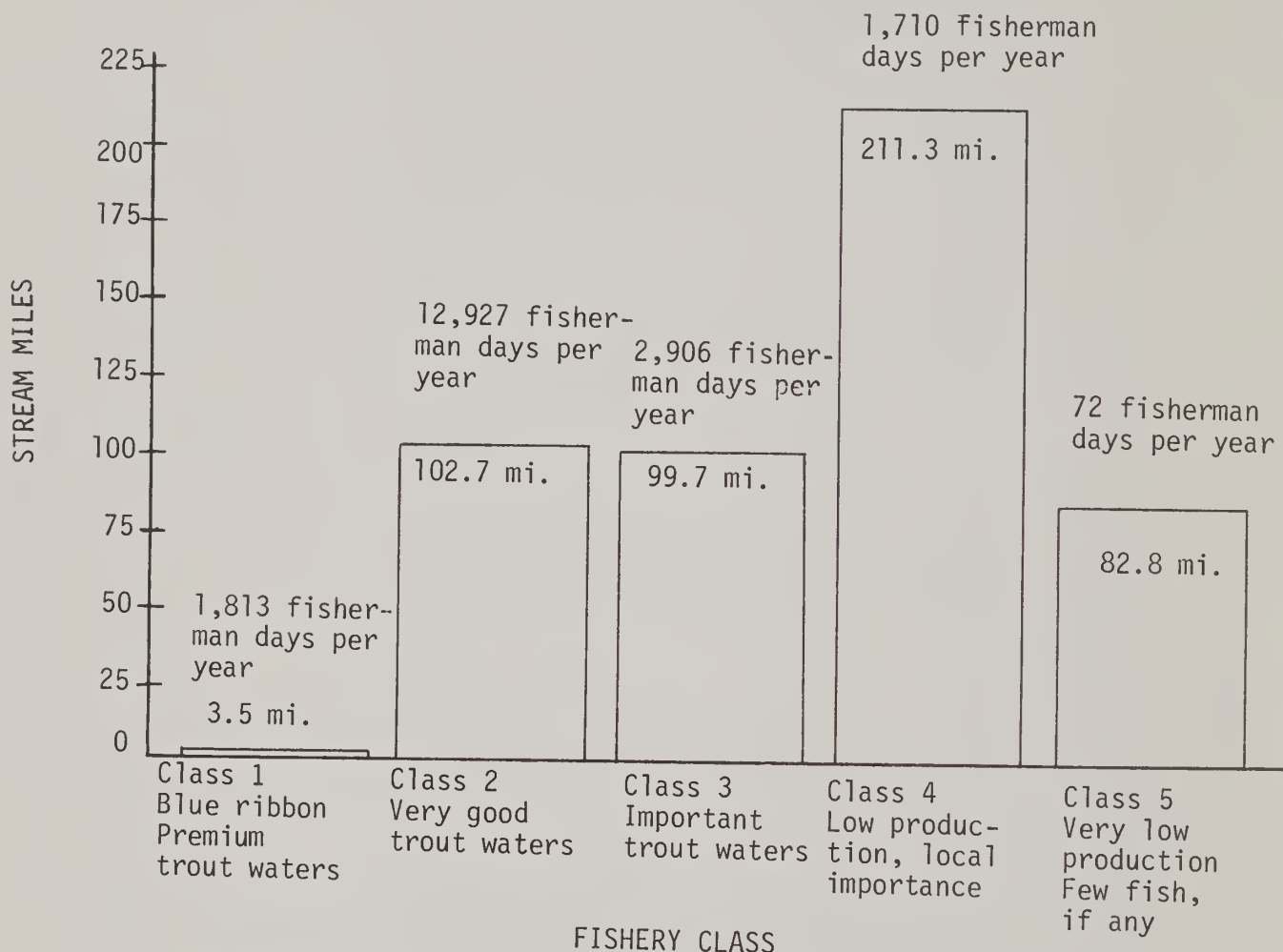
APPENDIX 4

Table 2 Minimum Stream Fishery Miles by Ownership and Fishing Stream Classification (Lincoln County)
Green River Basin, Wyoming

Fishery Classification	BLM	FS	State/ Local	Private	Other	Total
Blue ribbon	2.0	0.0	0.0	1.5	0.0	3.5
Red ribbon	6.5	32.8	5.5	56.4	1.5	102.7
Important	10.7	42.5	1.5	44.0	1.0	99.7
Low	36.5	102.4	5.1	67.3	0.0	211.3
Very low	46.5	12.4	7.5	16.4	0.0	82.8
Total Miles	102.2	190.1	19.6	185.6	2.5	500.0
% Ownership	20.4	38.0	3.9	37.1	.6	100.0

APPENDIX 4

Chart 17 Minimum stream fishery miles by fishery class and annual fisherman days use, Lincoln County, Green River Basin, Wyoming



Of 3.5 miles of "blue ribbon" trout water, all mileage supports high fish populations and the fishing waters will support heavy to moderate fishing pressure. Of 102.7 miles of very good trout water, all mileage supports a moderate fish population and can withstand much fishing pressure. Of 99.7 miles of important trout water, 4.0 miles are small fishing waters and cannot withstand much fishing pressure. The remaining 95.7 miles are small waters also but can withstand moderate to heavy fishing pressure. Of 211.3 miles of low value, locally important fishery, 90.9 miles are small fishing waters that cannot withstand much fishing pressure and 120.4 miles support few game fish and cannot support long-term fishery. Of 82.8 miles of very low value fishery, all mileage supports few game fish, if any, and cannot support a long-term fishery. More vehicle and foot access is needed to 154.8 miles of fishable stream in Lincoln County.

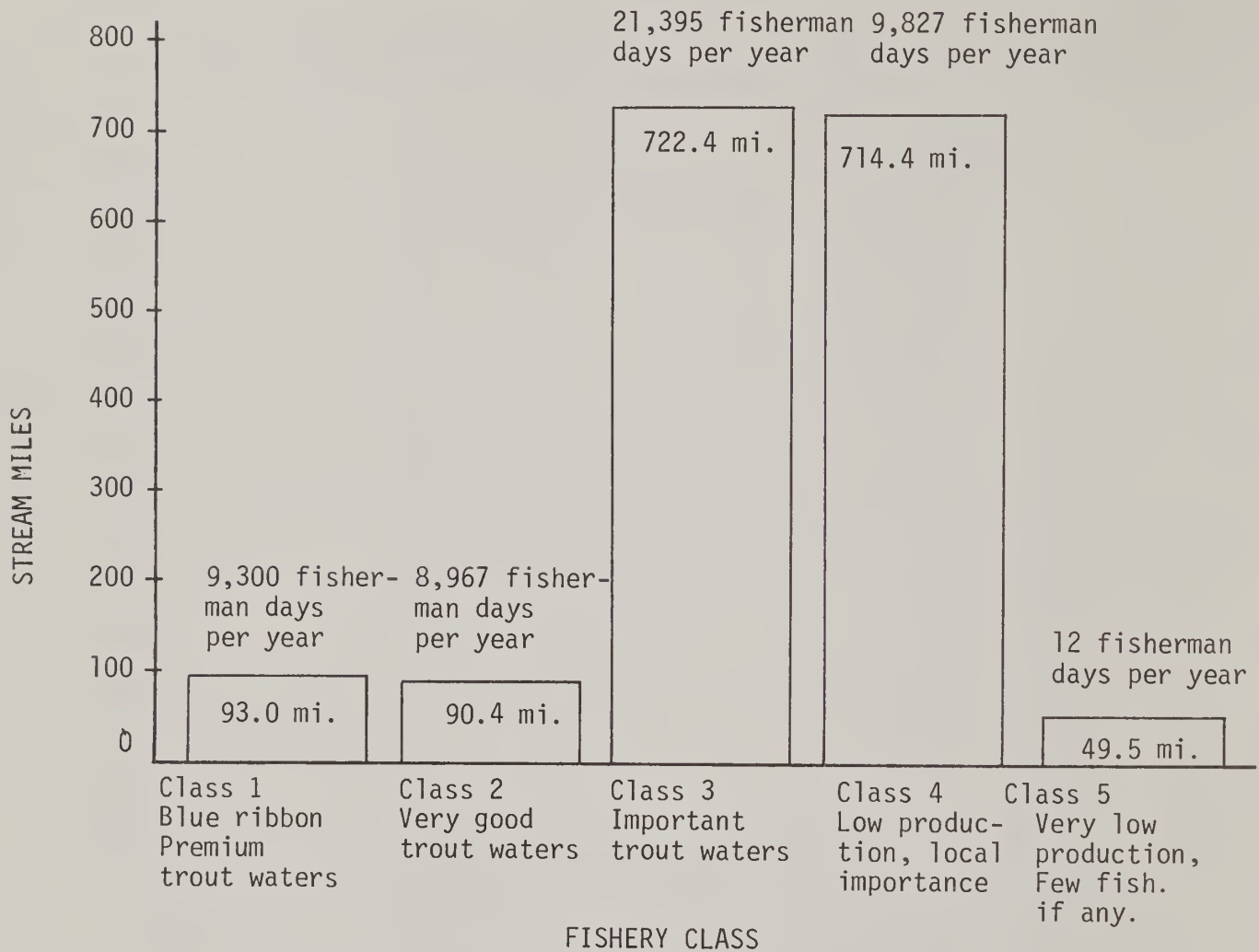
APPENDIX 4

Table 3 Minimum Stream Fishery Miles by Ownership
and Fishing Stream Classification (Sublette County)
Green River Basin, Wyoming

Fishery Classification	BLM	FS	State/ Local	Private	Other	Total
Blue ribbon	10.5	17.0	0.0	65.5	0.0	93.0
Red ribbon	9.5	9.0	5.0	61.1	5.8	90.4
Important	21.6	361.4	15.3	298.1	26.0	722.4
Low	100.6	376.5	12.2	225.1	0.0	714.4
Very low	26.0	.5	2.5	20.5	0.0	49.5
Total miles	168.2	764.4	35.0	670.3	31.8	1,669.7
% Ownership	10.1	45.8	2.1	40.1	1.9	100.0

APPENDIX 4

Chart 18 Minimum stream fishery miles by fishery class and annual fisherman days use, Sublette County, Green River Basin, Wyoming



Of 93.0 miles of "blue ribbon" trout waters, all mileage has moderate fish populations and can withstand much fishing pressure. Of 90.4 miles of very good trout waters, 81.4 miles have moderate fish populations and can withstand much fishing pressure. The remaining 9.0 miles are generally small waters with good productivity and can withstand moderate to heavy fishing pressure.

Of 722.4 miles of important trout waters, 45.0 miles support moderate populations and can withstand much fishing pressure, 377.5 miles are generally small fishing waters with good productivity and can withstand moderate to heavy fishing pressure, and 299.9 miles are small fishing waters and generally cannot withstand much fishing pressure. Of 714.4 miles of low value, locally important trout waters, 63.0 miles are generally small waters with good productivity that can withstand moderate to heavy fishing pressure and 326.6 miles are small and/or cannot withstand much fishing pressure. The other 324.8 miles support few game fish, if any, and cannot support a long-term fishery. Of 49.5 miles of very low value fishing stream, all mileage supports few, if any, game fish and cannot support a long-term fishery.

More vehicle and foot access is needed to 630.4 miles of fishable streams in Sublette County.

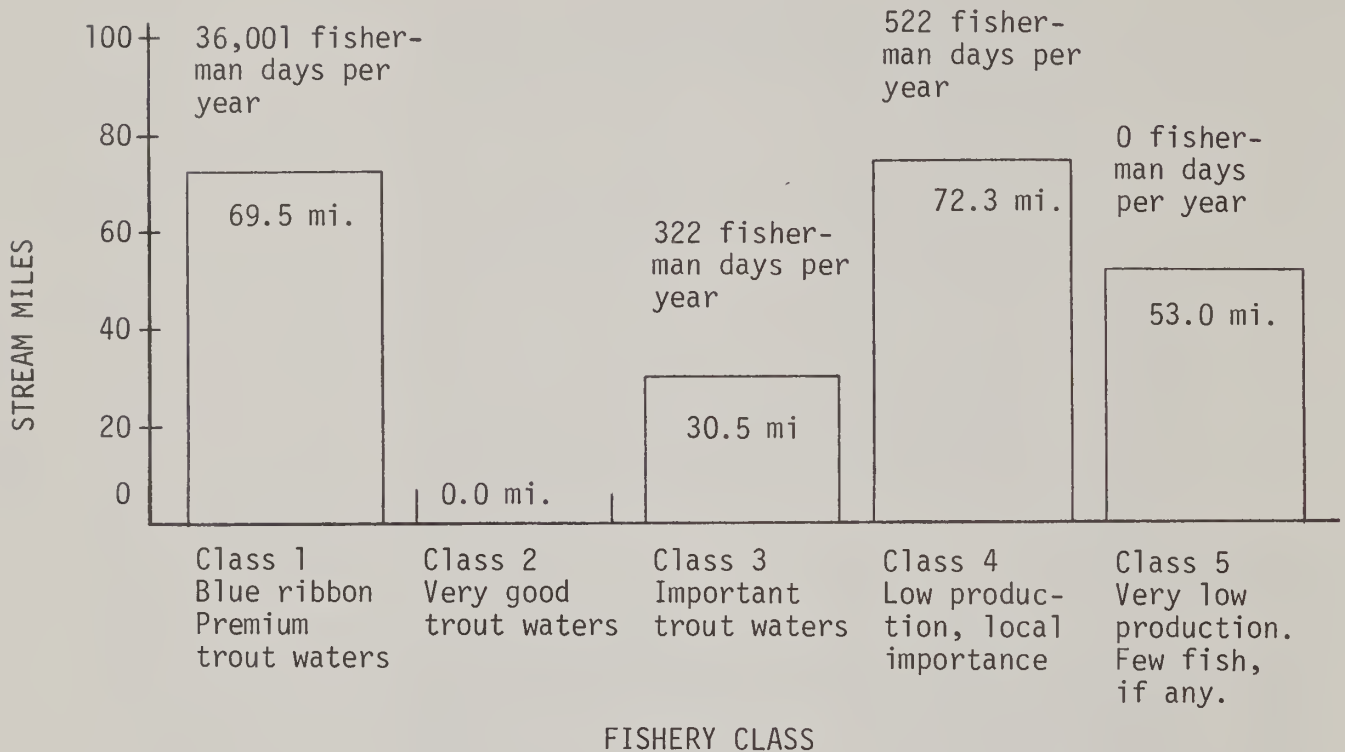
APPENDIX 4

Table 4 Minimum Stream Fishery Miles by Ownership
and Fishing Stream Classification (Sweetwater County)
Green River Basin, Wyoming

Fishery Classification	BLM	FS	State/ Local	Private	Other	Total
Blue ribbon	6.3	0.0	8.6	21.5	33.1	69.5
Red ribbon	0.0	0.0	0.0	0.0	0.0	0.0
Important	6.0	0.0	7.6	16.9	0.0	30.5
Low	20.9	0.5	12.4	38.5	0.0	72.3
Very low	49.5	0.0	1.0	2.5	0.0	53.0
Total miles	82.7	.5	29.6	79.4	33.1	225.3
% Ownership	36.7	.3	13.1	35.2	14.7	100.0

APPENDIX 4

Chart 19 Minimum stream fishery miles by fishery class and annual fisherman days use, Sweetwater County, Green River Basin, Wyoming



Of 69.5 miles of "blue ribbon" trout waters, all mileage supports high fish populations and is large enough to withstand moderate to heavy fishing pressure. Of 30.5 miles of important trout waters, 11.1 miles are generally small with good productivity and can withstand moderate to heavy fishing pressure and 19.4 miles are small and/or cannot withstand much fishing pressure. Of 72.3 miles of low valued, locally important trout waters, 54.9 miles are small and/or cannot withstand much fishing pressure. The remaining 17.4 miles have few game fish, if any, and cannot support a long-term fishery. Of the 53.0 miles of very low value fishing stream, all mileage supports few, if any, game fish and cannot support a long-term fishery.

More vehicle and foot access is needed to 51.3 miles of fishable streams in Sweetwater County.

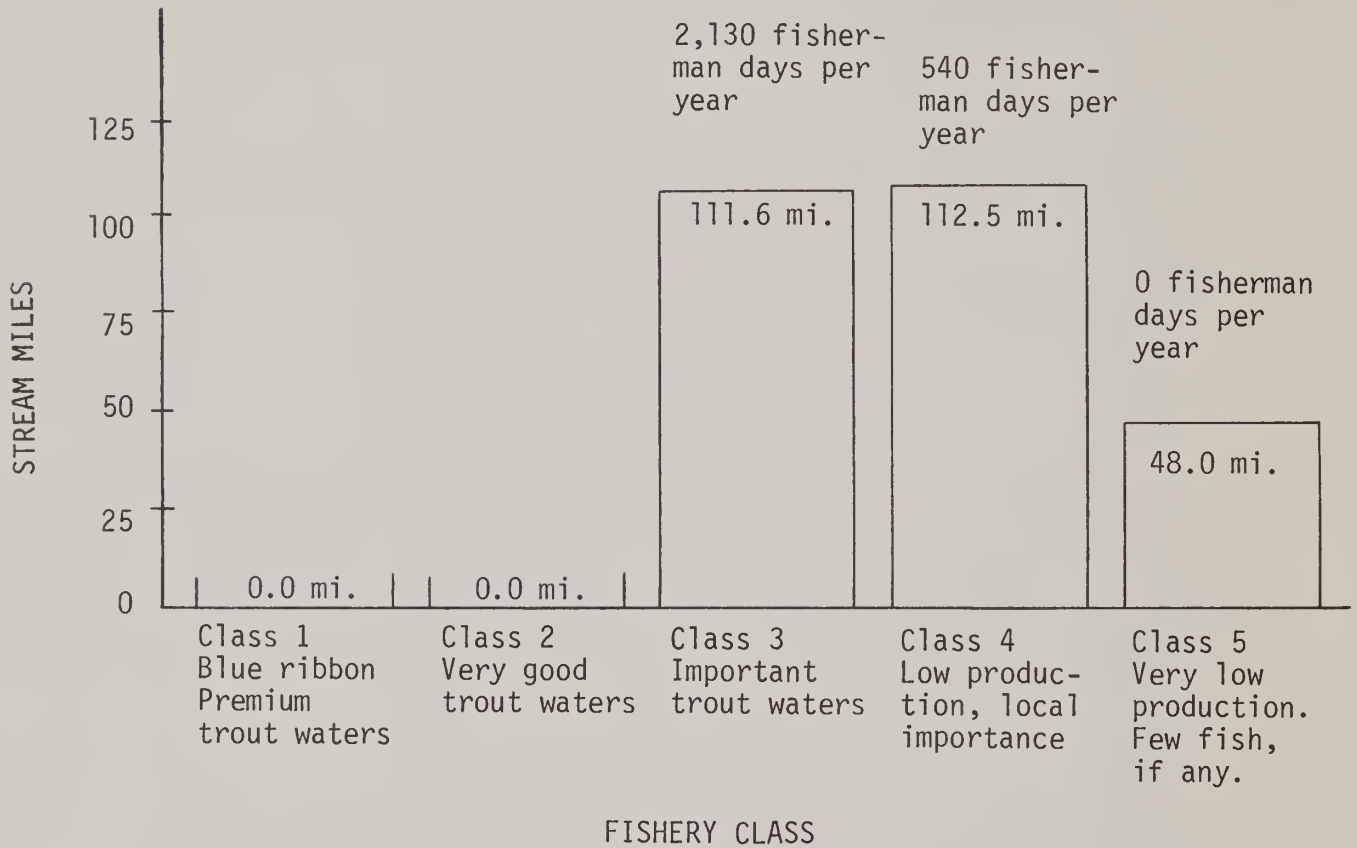
APPENDIX 4

Table 5 Minimum Stream Fishery Miles by Ownership
and Fishing Stream Classification (Uinta County)
Green River Basin, Wyoming

Fishery Classification	BLM	FS	State/ Local	Private	Other	Total
Blue ribbon	0.0	0.0	0.0	0.0	0.0	0.0
Red ribbon	0.0	0.0	0.0	0.0	0.0	0.0
Important	12.2	6.8	4.7	87.9	0.0	111.6
Low	22.2	28.2	4.0	58.1	0.0	112.5
Very low	4.0	0.0	1.8	42.2	0.0	48.0
Total miles	38.4	35.0	10.5	188.2	0.0	272.1
% Ownership	14.1	12.8	3.9	69.2	0.0	100.0

APPENDIX 4

Chart 20 Minimum stream fishery miles by fishery class and annual fisherman days use, Uinta County, Green River Basin, Wyoming



Of the 116.6 miles of important trout waters, 84.0 miles are generally small waters with good productivity and can withstand heavy to moderate fishing pressure. The other 27.6 miles are small and/or cannot withstand much fishing pressure. Of 112.5 miles of low value, locally important trout waters, 46.6 miles are small and/or cannot withstand much fishing pressure and 65.9 miles support few game fish and cannot sustain long-term fisheries. Of 48.0 miles of very low value trout waters, all mileage supports few game fish and cannot sustain long-term fisheries. More access is needed to 222.4 miles of fishable streams in Uinta County.

APPENDIX 5 Raptors ^{1/}

Species	When Present				Use		Abundance			
	Winter	Spring	Summer	Fall	Resident	Migrant	Common	Uncommon	Rare	Endangered
Eagles:										
Bald eagle	x	x	x	x	x	x	x			
Golden eagle	x	x	x	x	x	x	x			
Buteos:										
Red-tailed hawk		x	x	x	x	x	x			
Swainson's hawk		x	x	x	x	x	x			
Rough-legged hawk	x					x	x			
Ferruginous hawk	x	x	x	x	x	x	x			
Accipiters:										
Goshawk	x	x	x	x	x	x	x			
Cooper's hawk	x	x	x	x	x	x	x			
Sharp-shinned hawk		x	x	x	x	x		x		
Harriers:										
March hawk	x	x	x	x	x	x	x			
Falcons:										
Gyr Falcon	x					x			x	
Prairie falcon	x	x	x	x	x	x	x			
Peregrine falcon		x	x	x	x	x				x
Merlin	x	x		x		x		x		
American kestrel		x	x	x	x	x	x			
Osprey:										
Osprey		x	x	x	x	x	x			
Vulture:										
Turkey vulture		x	x	x	x	x	x			
Strigidae:										
Great-horned owl	x	x	x	x	x	x	x			
Screech owl	x	x	x	x	x	x	x			
Long-eared owl	x	x	x	x	x	x	x			
Short-eared owl	x	x	x	x	x	x		x		
Snowy owl	x					x				
Great gray owl	x					x			x	
Burrowing owl		x	x	x	x	x		x		
Saw-whet owl	x	x	x	x	x	x	x			
Flammulated owl			x			x			x	
Pygmy owl	x	x	x	x	x	x		x		

^{1/} U.S. Bureau of Reclamation, Resource Base Appendix, Sublette Project Investigation, April 1975, and July 1977.

APPENDIX 6 Protected Water, Wading and Shore Birds ^{1/}

Species	When Present				Use		Abundance			
	Winter	Spring	Summer	Fall	Resident	Migrant	Common	Uncommon	Rare	Endangered
Loons:										
Common loon		x	x	x	x	x	x			
Red-throated loon				x		x			x	
Grebes:										
Western grebe		x	x	x	x	x	x			
Horned grebe		x		x		x		x		
Eared grebe		x	x	x	x	x	x			
Pied-billed grebe		x	x	x	x	x	x			
Pelecanidae:										
White pelican		x	x	x	x	x		x		
Cormorants										
Double-crested cormorant		x		x		x		x		
Hérons and Bitterns:										
Great blue heron	x	x	x	x	x	x	x			
Snowy egret		x	x	x	x	x	x			
Black-crowned night heron		x	x	x	x	x	x			
American bittern		x	x	x	x	x	x			
Ibis:										
Shite-faced ibis		x	x	x	x	x	x			
Ràils and Gallinules:										
Yellow rail		x		x		x			x	
Common gallinule		x				x			x	
Plovers:										
Mountain plover		x	x	x		x	x	x		
Black-bellied plover		x		x		x			x	
Snowy plover		x		x		x			x	
Killdeer		x	x	x	x	x	x			
Sandpipers, etc.										
Long-billed curlew		x	x	x	x	x	x			
Spotted sandpiper		x	x	x	x	x	x			
Solitary sandpiper		x		x		x	x			
Baird's sandpiper		x		x		x		x		
Pectoral sandpiper		x		x		x		x		
Least sandpiper		x		x		x	x			
Semipalmated sandpiper				x		x	x			
Western sandpiper		x		x		x	x			
Upland plover		x			x	x	x			
Willet		x		x	x	x	x			
Greater yellowlegs		x		x		x	x			
Lesser yellowlegs		x		x		x		x		
Knot		x				x			x	
Marbled godwit		x	x	x	x	x		x		
Sanderling		x		x		x		x		
Long-billed dowitcher		x	x	x	x	x		x		
Black-necked stilt			x					x		
Avocets										
American avocet		x	x	x	x	x	x			
Phalaropes										
Wilson's phalarope		x	x	x	x	x	x			
Northern phalarope		x		x		x		x		
Gulls and Terns										
California bull		x	x	x	x	x	x			
Ring-billed bull		x	x	x	x	x	x			
Bonaparte's gull		x		x		x			x	
Franklin's gull		x	x	x	x	x	x			
Herring gull		x		x		x		x		
Forester's tern		x	x	x	x	x		x		
Casplan tern		x		x		x				
Black tern		x	x	x	x	x	x		x	

1/ U.S. Bureau of Reclamation, Resource Base Appendix, Sublette Project Investigation, April 1975 and July 1977.

APPENDIX 7 Insectivorous and Songbirds ^{1/}

Species	When Present				Use		Abundance			
	Winter	Spring	Summer	Fall	Resident	Migrant	Common	Uncommon	Rare	Endangered
Yellow-billed cuckoo			x	x	x	x		x		
Poor-will			x		x	x		x		
Common nighthawk		x	x	x	x	x	x			
White-throated swift			x		x	x		x		
Broad-tailed hummingbird		x	x	x	x	x	x			
Calliope hummingbird				x		x		x		
Rufous hummingbird				x		x	x			
Black-chinned hummingbird			x	x		x			x	
Belted kingfisher	x	x	x	x	x		x			
Common flicker	x	x	x	x	x		x			
Red headed woodpecker			x			x			x	
Lewis' woodpecker		x	x	x	x			x		
Yellow-bellied sapsucker		x	x	x	x	x	x			
Williamson's sapsucker			x			x		x		
Hairy woodpecker	x	x	x	x	x		x			
Downy woodpecker	x	x	x	x	x		x			
Northern three-toed wood-pecker	x	x	x	x	x			x		
Eastern kingbird		x	x	x	x	x	x			
Western kingbird		x	x	x	x	x		x		
Ash-throated flycatcher			x			x			x	
Say's phoebe		x	x	x	x	x	x			
Willow flycatcher		x	x	x	x	x	x			
Hammond's flycatcher		x	x	x	x	x	x			
Dusky flycatcher			x		x	x		x		
Western flycatcher		x	x	x	x	x	x			
Western wood peewee		x	x	x	x	x	x			
Olive-sided flycatcher		x	x	x	x	x	x			
Horned lark	x	x	x	x	x		x			
Barn swallow		x	x	x	x	x	x			
Cliff swallow		x	x	x	x	x	x			
Violet-green swallow		x	x	x	x	x	x			
Tree swallow		x	x	x	x	x	x			
Bank swallow		x	x	x	x	x		x		
Rough-winged swallow		x	x	x	x	x		x		
Purple martin		x	x	x	x	x			x	
Steller's jay	x	x	x	x	x	x	x			
Scrub jay	x	x	x	x	x	x		x		
Pinyon jay	x	x	x	x	x	x	x			
Gray jay	x	x	x	x	x	x		x		
Clark's nutcracker	x	x	x	x	x	x	x			
Black-capped chickadee	x	x	x	x	x	x	x			
Black billed magpie	x	x	x	x	x	x	x			
Common raven	x	x	x	x	x	x	x			
Common crow	x	x	x	x	x	x	x			
Mountain chickadee	x	x	x	x	x	x	x			
Dipper	x	x	x	x	x		x			
Plain titmouse	x	x	x	x	x	x		x		
Common bushtit	x	x	x	x	x	x	x			
White-breasted nuthatch	x	x	x	x	x	x				
Red-breasted nuthatch	x	x	x	x	x	x	x			
Pygmy nuthatch	x	x	x	x	x	x	x			
Brown creeper	x	x	x	x	x	x		x		
House wren		x	x	x	x	x	x			
Bewick's wren	x	x	x	x	x	x		x		
Rock wren	x	x	x	x	x	x		x		
Canyon wren	x	x	x	x	x	x	x			
Long-billed marsh wren		x	x	x	x	x	x			
Mockingbird	x	x	x	x	x	x			x	
Catbird		x	x	x	x	x		x		
Sage thrasher		x	x	x	x	x	x			
Robin	x	x	x	x	x	x	x			
Townsend's solitaire	x	x	x	x	x	x		x		
Hermit thrush			x		x	x	x			
Swainson's thrush			x		x	x	x			

^{1/} U.S. Bureau of Reclamation, Resource Base Appendix, Sublette Project Investigation, April 1975, and July 1977.

APPENDIX 7 Insectivorous and Songbirds Cont. 1/

Species	When Present				Use		Abundance			
	Winter	Spring	Summer	Fall	Resident	Migrant	Common	Uncommon	Rare	Endangered
Veery		x	x	x	x	x	x			
Western bluebird			x			x				
Mountain bluebird		x	x	x	x	x	x		x	
Golden-crowned kinglet		x	x	x	x	x	x			
Ruby-crowned kinglet		x	x	x	x	x	x			
Water pipit		x	x	x	x	x	x			
Sprague's pipit		x		x		x		x		
Bohemian waxwing	x					x	x			
Cedar waxwing	x	x	x	x	x	x	x			
Northern shrike	x	x		x		x		x		
Loggerheaded shrike		x	x		x	x	x			
Starling		x	x	x	x	x	x			
Solitary vireo		x	x	x	x	x	x			
Red-eyed vireo			x		x	x		x		
Warbling vireo		x	x	x	x	x	x			
Black and white warbler		x				x		x		
Orange crowned warbler		x	x	x	x	x	x			
Yellow warbler		x	x	x	x	x	x			
Yellow-rumped warbler		x	x	x	x	x	x			
Townsend's warbler				x		x			x	
Northern waterthrush		x		x		x		x		
Yellowthroat		x		x		x		x		
Yellow-breasted chat		x	x	x	x	x	x			
MacGillivray's warbler		x	x	x	x	x	x			
Wilson's warbler		x	x	x	x	x	x			
American redstart		x	x	x	x	x				x
Bobolink		x		x		x				x
Western meadowlark		x	x	x	x	x	x			
Yellow-headed blackbird		x	x	x	x	x	x			
Red-winged blackbird		x	x	x	x	x	x			
Brewer's blackbird		x	x	x	x	x	x			
Brown-headed cowbird		x	x	x	x	x	x			
Northern oriole		x	x	x	x	x	x			
Western tanager		x	x	x	x	x	x			
Black-headed grosbeak		x	x	x	x	x	x			
Evening grosbeak	x	x	x	x	x	x	x			
Lazuli bunting			x		x	x				x
Purple finch		x	x	x	x	x	x			
Cassin's finch	x	x	x	x	x	x				
House finch		x	x	x	x	x		x		
Pine grosbeak	x	x	x	x	x	x	x			
Gray-crowned rosy finch	x					x	x			
Black rosy finch	x	x	x	x	x	x	x			
Brown-capped rosy finch	x	x	x	x	x	x				x
Common redpoll	x					x				x
Pine siskin	x	x	x	x	x	x	x			
American goldfinch		x		x	x	x	x			
Lesser goldfinch			x		x	x		x		
Red crossbill	x	x	x	x	x	x		x		
White-winged crossbill	x					x				x
Green-tailed towhee		x	x	x	x	x				
Rufous-sided towhee	x	x	x	x	x	x		x		
Savannah sparrow		x		x	x	x	x			
Grasshopper sparrow			x		x	x	x			
Baird's sparrow		x		x		x				x
Lark bunting		x		x	x	x	x			
Vesper sparrow		x	x	x	x	x	x			
Lark sparrow		x	x	x	x	x	x			
Sage sparrow		x	x	x	x	x	x			
Dark-eyed junco	x	x	x	x	x	x	x			
Tree sparrow	x					x	x			
Chipping sparrow		x		x	x	x	x			
Clay-colored sparrow			x			x				
Brewer's sparrow		x	x	x	x	x	x			x
Harris sparrow		x		x		x				
White-crowned sparrow	x	x	x	x	x	x	x			x
Fox sparrow		x	x	x	x	x	x			
Lincoln sparrow		x	x	x	x	x	x			
Song sparrow	x	x	x	x	x	x	x			
McCown's longspur		x				x				
Chestnut-collared longspur		x		x		x				x
Lapland longspur	x					x		x		
Snow bunting	x					x				x

1/ U.S. Bureau of Reclamation, Resource Base Appendix, Sublette Project Investigation, April 1975 and July 1977.

APPENDIX 8 Reptiles and Amphibians

Species	Probable Subspecies	Abundance			
		Common	Uncommon	Rare	Questionable
Lizards:					
Eastern fence lizard	Northern plateau lizard	x			
Sagebrush lizard	Northern sagebrush lizard	x			
Side-blotched lizard	Northern side-blotched lizard			x	X
Tree lizard	Tree lizard			x	
Short-horned lizard	(a) Eastern short-horned lizard	x			
	(b) Desert short-horned lizard	x			
Snakes					
Rubber boa	Rocky Mountain rubber boa			x	
Racer	(a) Western yellow-bellied racer				x
	(b) Eastern yellow-bellied racer				x
Smooth green snake	Western smooth green snake			x	
Gopher snake	Great Basin gopher snake			x	
Western terrestrial garter snake	Wandering garter snake	x			
Western rattlesnake	(a) Prairie rattlesnake	x			
	(b) Midget-faded rattlesnake	x			
Salamander:					
Tiger salamander	(a) Blotched tiger salamander	x			
Toads:					
Great Basin spadefoot	Great Basin spadefoot	x			
Western toad	Boreal toad	x			
Frogs					
Chorus frog	Boreal chorus frog	x			
Spotted frog	Spotted frog			x	
Leopard frog	Leopard frog	x			
Bullfrog	Bullfrog				x

APPENDIX 9

Historic Sites and Descriptions by County Green River Basin, Wyoming

Lincoln County

1. ASTORIANS MONUMENT - located on abandoned U.S. 89 across the Lake from Alpine - stone and cement, plaque is gone - was dedicated at opening of Snake River Canyon Road according to local residents (road has since been changed).
2. FOSSIL BUTTE INFORMATIVE SIGN - located on the southwest side of U.S. 30 N., approximately 10 miles west of Kemmerer - wood sign - gives information on Fossil Butte.
3. GROVER PIONEER'S MONUMENT - located on the grounds of one of the churches in Grover - cement, bronze plaque - in memory of the pioneers who built Grover.
4. HILL, NANCY GRAVE - located northwest of Kemmerer and Frontier - stone - marks pioneer's grave.
5. KEMMERER FOUNDER'S MONUMENT - located in the City Park on the east side of U.S. 30 N. in Kemmerer - granite boulder - gives dates and who founded Kemmerer.
6. NAMES HILL - located on the west side of U.S. 189 between Kemmerer and LaBarge - granite, metal plaque - marks the site of a crossing on the Green River for the Oregon Trail.
7. NAMES HILL INFORMATIVE SIGN - located on the west side of U.S. 189 between Kemmerer and LaBarge - wood sign - gives information on Jim Bridger.
8. OREGON CATTLE TRAIL MONUMENT - located on the east side of U.S. 89 2½ miles south of Smoot - stone and cement, metal plaque - marks the Oregon Trail and pays tribute to trail drivers.
9. OREGON TRAIL-LANDER CUTOFF MARKER - located on the east side of U.S. 89 south of Smoot 5 miles - stone and cement, metal plaque - marks the Lander Cutoff of the Oregon Trail.
10. OREGON TRAIL MONUMENT - located in the City Park at Cokeville - granite, metal plaque - marks the Oregon Trail.
11. OREGON TRAIL MONUMENT - located on the east side of U.S. 30 N. in Cokeville - native stones, cement, metal plaque - marks the Oregon Trail.

12. OREGON TRAIL MONUMENT - located in the City Park on the east side of U.S. 30 N. in Kemmerer - granite, metal plaque - marks the Oregon Trail.
13. OREGON TRAIL-SUBLETTE CUTOFF MARKER - located approximately 3 miles east of Cokeville on U.S. 30 N. - (marker has been removed by vandals) - sandstone - marked the Oregon Trail east of Cokeville.
14. PIONEERS MONUMENT - located on the north side of Main Street in the town of Opal - cobblestones, metal plaque - marks the Oregon Trail.
15. SEED-KEE-DEE AGIE, SPANISH RIVER, RIO VERDE, GREEN RIVER INFORMATIVE SIGN - located on the east side of U.S. 189 several miles north of Kemmerer - wood sign - gives brief history of area.
16. WYOMING-IDAHO ANNIVERSARY - located on the north side of U.S. 30 N. at the state line north of Cokeville - stone, cement, bronze plaques - monument to Idaho-Wyoming giving dates.

Sublette County

1. ASTORIAN INCIDENT - located north side of U.S. 187 approximately 1 mile east of Hoback Rim Station - wood sign - gives history of the Astorian Exploration in this area.
2. BUCKSKIN CROSSING - located on county road part end of State 1804 at crossing of county road and Big Sandy - wood sign with log posts and log supports - crossing at Big Sandy River used by fur companies and trappers. It is a ford of the Lander Cutoff of the Oregon Trail, campsite and burial ground was heavily used by emigrants.
3. CATTLE AND MEN - located near Lander Cutoff and Pioneer Monument, west side U.S. 189, 3 miles north of Big Piney - wood sign - gives history of cattle drivers and herds in area.
4. DeSMET MONUMENT - located on Swabacker Ranch overlooking Daniel approximately 5 miles southeast - granite cross within a stone chapel, metal plaque - marks site where DeSmet gave Mass (H. L. Comm.).
5. Two markers at this location:
 - 5.1 FORT BONNEVILLE INFORMATIVE SIGN - located on road 1805, 3.1 miles west of Daniel Junction U.S. 187-189 - wood sign - gives history of Fort Bonneville.

5.2 FORT BONNEVILLE MONUMENT - located near Fort Bonneville Informative Sign - granite boulder - marks site of Fort Bonneville.

6. FREMONT'S (LT.) WEEK IN SUBLETTE COUNTY - located on State 1804, 20 feet off highway east of Boulder on south side of Silver Creek, west side of road - wood sign - gives information on Fremont's trip in 1842 when he left St. Louis to explore the Wind River Mountains with Kit Carson as a guide.
7. FUR TRADER'S RENDEZVOUS SIGN - located on the west side of U.S. 187, south edge of Pinedale - advertises yearly pageant at Pinedale.
8. GRASS OR SAND SPRINGS CAMPSITE - located on county road at end of State 1804, at crossing of county road and Big Sandy - gives history of Lander Cutoff located across road from Buckskin Crossing.
9. GREEN RIVER RENDEZVOUS INFORMATIVE SIGN - located near Whitman-Spalding Plaque, small park north edge of Daniel - wood sign - gives information of famous rendezvous.
10. LANDER CUTOFF AND PIONEER MONUMENT - located west side of U.S. 189, 3 miles north of Big Piney - granite - marks Lander Cutoff Road (H. L. Comm.).
11. LANDER TRAIL MONUMENT - located east side of U.S. 187, 38 miles north of Farson - granite marker - marks Lander Cutoff, first government financed road.
12. NAMING OF A LAKE - located north side of road overlooking lake northeast of Pinedale - wood sign - gives history of Fremont Lake.
13. ON THE ASHES OF THEIR CAMPFIRES - located south side of Highways U.S. 185 and 187 at lower end of Hoback Basin near county line - wood sign - gives the history of the Hoback Canyon area (USFS Teton National Forest).
14. OREGON TRAIL MARKER - located north side of Wyoming 28, 22 miles east of Farson - cement, metal plaque - marks the Oregon Trail (H. L. Comm.).
15. PARKER, REVEREND SAMUAL - located on U.S. 187 in meadow 100 feet west from Sublette Co. #1, at lower end of Hoback Basin near county line - granite boulder, metal plaque - dedicated to the man who gave the first Protestant sermon to the pioneers and trappers.

16. PARTING OF THE WAYS MONUMENT - located north side of Wyoming 28, 22 miles east of Farson - granite marks the fork of the trail to Oregon and California - also some history (H. L. Comm.).
17. PAUSE ON A JOURNEY - located south side of U.S. 187 in Pinedale - wood sign - gives account of the Astorians passing area.
18. PINEDALE DESCRIPTIVE ACTIVITY SIGN - located south edge of Pinedale north side of U.S. 187 - wood sign, map - points out location of activities.
19. PRAIRIE MASS INFORMATIVE SIGN - located on U.S. 189, 1.8 miles south of Daniel - wood sign - tells history of Father DeSmet and first Mass in Wyoming.
20. SUBLETTE, PINCKEY W. MONUMENT - located on Swabacker Ranch, overlooking Daniel approximately 5 miles southeast - granite boulder, metal plaque - marks grave of P. W. Sublette (H. L. Comm.).
21. UPPER GREEN RIVER RENDEZVOUS - located 100 yards off U.S. 187, 6 miles west of Pinedale at the Cora Junction - wood sign and metal plaque - gives history of the Rendezvous Site.
22. WHITMAN - SPALDING PLAQUE - located in small park north edge of Daniel - boulder, metal plaque - describing passage of Whitman.

Sweetwater County

1. ALMOND STAGE STATION MONUMENT - located north side of I-80 at Point of Rocks - granite - marks site of Almond Overland Stage Station.
2. BRYAN INFORMATIVE SIGN - located north side of U.S. 30 near Blacks Fork Bridge - wood sign - gives history of railroad town of Bryan (A. & Hist. D.).
3. CONTINENTAL DIVIDE INFORMATIVE SIGN - located near Continental Divide Monument, south side I-80 at Continental Divide west of Rawlins - wood sign - gives elevation and describes area.
4. CONTINENTAL DIVIDE MONUMENT - located south side of I-80 at Continental Divide west of Rawlins - granite - marks Continental Divide and dedicated to A. Lincoln.
5. GRANGER STATION OR SOUTH BEND STATION - located west side of old U.S. 30 N. southwest of Granger near Blacks Fork Bridge - granite, metal plaque - marks the site of Station (still standing).

6. GREEN RIVER FERRY & STATION MONUMENT - located south side Wyoming 530, west part of Green River - granite - marks site of Overland Stage Route & Green River Station (H. L. Comm.).
7. LITTLE SANDY CROSSING MONUMENT - located west side U.S. 187 in Farson - granite, metal plaque - marks spot where J. Bridger and B. Young met and gives history.
8. OREGON TRAIL MONUMENT - located east side U.S. 187, 8 miles north of Farson - granite marks site of Sublette Cutoff from Big Sandy to Bear River (H. L. Comm.).
9. OREGON TRAIL MONUMENT - located Sweetwater County Courthouse Square, Green River - granite, metal plaque - memorial to pioneers.
10. OVERLAND STAGE ROUTE INFORMATIVE SIGN - located on south side I-80 at Point of Rocks - wood sign - gives history of Overland Stage Line (A. & Hist. D.).
11. PONY EXPRESS MARKER - located near westside U.S. 187 in Farson - granite, metal plaque - marks site of Big Sandy Pony Express Station.
12. Two monuments on this island:
 - 12.1 POWELL MONUMENT - located Island Park, north of Wyoming 530 in Green River - granite - marks site where Maj. Powell started down river expedition (H. L. Comm.).
 - 12.2 COLORADO RIVER EXPEDITION MONUMENT - located near the head of the island - granite - a Nat'l Historic Marker "1969" to Major John Wesley Powell.
13. ROCK SPRINGS STAGE STATION MONUMENT - located west of railroad track in northern part of Rock Springs - granite - marks site of Rock Springs Stage Station, near the original spring (dried up) the town was named for.
14. TRI-TERRITORY HISTORIC SITE - located between Oregon Buttes and Steamboat, MT, east of Farson on U.S. 187 or Wyoming 28 - cement and native stone with bronze plaque - marks common boundary of Louisiana Purchase, the Northwest Territory and Mexico.
15. MAJOR JOHN WESLEY POWELL INTERPRETIVE SIGN - located at Buckboard Recreation Area, Flaming Gorge National Forest - interprets the Powell expedition and exploration of the Green and Colorado Rivers.
16. FIRST FUR RENDEZVOUS IN ROCKY MOUNTAINS - located on Henrys Fork of the Green River - a most significant historic site.

Uinta County

1. BEAR RIVER CITY INFORMATIVE SIGN - located northeast side - wood sign - giving history of boom town of Bear River City (A. & Hist. Dept.).
2. BEEHIVE MONUMENT - located on abandoned U.S. 30, 6½ miles east of Lyman - cement, metal plaque - memorial to Mormon pioneers.
3. CHARCOAL KILNS MONUMENT - located 5 miles south of abandoned U.S. 30 near Piedmont - granite - marks charcoal kilns and gives purpose of construction.
4. CHURCH BUTTE - MORMON MONUMENT - located east side of abandoned U.S. 30, 15½ miles east of Lyman - cement, metal plaque - memorial to Mormon pioneers.
5. EVANSTON INFORMATIVE SIGN - located north side of highway near rodeo grounds - wood sign - giving history of Evanston.
6. FORT BRIDGER - fourteen signs at this location:
 - 6.1 CARTER CEMETERY - located at Ft. Bridger - aluminum marker - marks grave of Judge Wm. A. Carter and others that lived at Ft. Bridger.
 - 6.2 COMMANDING OFFICER'S QUARTERS - located at Ft. Bridger - aluminum alloy - house of commanding officer.
 - 6.3 ENTRANCE MONUMENT - located at Ft. Bridger - stone and cement 9' high, metal plaque - gives dates of Ft. Bridger.
 - 6.4 FIRST SCHOOLHOUSE PLAQUE - located at Ft. Bridger - metal plaque on building - first schoolhouse in Wyoming, information on first teacher and pupils.
 - 6.5 GATEWAY MONUMENT - located at Ft. Bridger - stone and cement metal plaque - gives information and route of Pony Express.
 - 6.6 INFORMATIVE SIGN - located in Storeroom at Ft. Bridger - wood sign - giving some history of James Bridger.
 - 6.7 MORMON OCCUPATION - located at Ft. Bridger - cast aluminum - tells of the occupancy and burning of Ft. Bridger.
 - 6.8 MORMON WALL - located at Ft. Bridger - metal plaque on remains of stone wall - gives history of purchase of Ft. Bridger by the L.D.S.

- 6.9 MUSEUM - located at Ft. Bridger - metal plaque on museum building - originally the main barracks.
- 6.10 PONY EXPRESS - OREGON TRAIL - located at Ft. Bridger - granite, metal plaque - marks Pony Express and Oregon Trail.
- 6.11 PONY EXPRESS PLAQUE - located at Ft. Bridger - cobblestone and cement, metal plaques - gives information and route of Pony Express.
- 6.12 THORNBURGH GRAVE - located at Ft. Bridger - granite headstone - marks grave.
- 6.13 VETERANS MONUMENT - located at Ft. Bridger - memorial of the boys who made the supreme sacrifice in World War II.
- 7. FORT SUPPLY SITE - located southwest of Robertson, Wyoming - granite, metal plaque - marks the site of Ft. Supply and other information of the area.
- 8. MORMON MONUMENT - located 10 miles southeast of Evanston Road 2100 - cobblestone and cement monument, metal plaque - in memory of the Mormons who died in this area.
- 9. PIONEER MONUMENT - located at Lyman, Wyoming - erected by the LDS church for their pioneers.
- 10. PONY EXPRESS - OVERLAND STAGE MONUMENT - located 10.2 miles south of Evanston, west side Road 2100 - granite - gives dates of Pony Express and Overland Stage operation (H. L. Comm.).

Carbon County

- 1. CATTLE TRAIL MONUMENT - located north side of U.S. 30 at Como Bluff (same as Dinosaur Graveyard), Albany-Carbon county line - wood sign - covered with brands.
- 2. CHEROKEE TRAIL - located 13½ miles from McFadden on road from McFadden to Elk Mountain - granite 3½ feet high - marks the Cherokee Trail.
- 3. DALEY FLAGPOLE - located on Carbon County Courthouse lawn - wooden flagpole - built by the same man who built the original Fort Kearny flagpole.
- 4. DINOSAUR GRAVEYARD - located north side of U.S. 30 at Como Bluff, Albany-Carbon county line - wood sign - described fossil beds containing dinosaur skeletons.

5. EDISON, THOMAS A., MONUMENT - located south side of Road 1401 near Battle Lake, west of Encampment - cement monument 3' high, metal plaque - describes some experiments Edison made near the spot.
6. ENCAMPMENT, WYOMING INFORMATIVE SIGN - located west side of highway on the northern edge of Encampment - wood sign - gives history of the Encampment area (A. & Hist. D.).
7. FORT HALLECK MONUMENT - located 4 miles west of Road 0404 north of town of Elk Mountain - granite 4½' high - marks the site of Fort Halleck.
8. FORT STEELE, FRED INFORMATIVE SIGN - located north of I-80 at picnic area west side of Platte River - wood sign - gives brief history of Fort Fred Steele (A. & Hist. D.).
9. FORT STEELE, FRED MONUMENT - located 1½ miles north of Fort Fred Steele informative sign, north of I-80 on west side of Platte River - granite monument - marks the site of the fort.
10. OVERLAND TRAIL MARKER - located on hill east overlooking the town of Elk Mountain - granite 3½' high - marks Overland Trail.
11. OVERLAND TRAIL MARKER - located on the west side of Wyoming 130, 11 miles north of Saratoga - granite 3½' high - marks Overland Trail.
12. OVERLAND TRAIL - PLATTE RIVER CROSSING - located 9 miles west of Overland Trail Marker - granite 5½' high marker - marks Platte River crossing of Overland Trail, small cemetery just south.
13. RAWLINS - located in front of City Hall - brick and cement 4½' high, metal plaque - gives history of naming of Rawlins.
14. RAWLINS SPRINGS - located on I-80, south side of the enclosed Carbon County road, equipment and maintenance shop area - native stone 4 x 3 x 1' mortar, bronze plaque, cement base.
15. ROCK CREEK STAGE CROSSING - Located in ranch yard 7½ miles up Rock Creek from McFadden - granite 4½' high - marks the site of stage crossing.
16. SEMINOE DAM - located on west end of dam - bronze plaque giving information on Seminoe Dam.
17. WASHAKIE STATION - located on the west side of Wyoming 789, 18.8 miles south of I-80 at Creston Junction - cement 22" high, metal plaque - tells about the site of the stage station.

18. WISTER MONUMENT - located south side of U.S. 30 in Medicine Bow - petrified wood and concrete, metal plaque - tells of author Owen Wister (H. L. Comm.).*
19. WALN, S., MORRIS - located on U.S. 220 one mile southwest of Alcova-Seminor Road, 14 miles south of river at Alcova - granite cross 6½' high, steel posts with chain fence 8 x 8' - marks gravesite.

* The Virginian by Owen Wister, Medicine Bow.

